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HEADACHE

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GUTHRIE

The symptom of headache is the most insistent and difficult manifestation of disease from the standpoint of relief. The agony produced by the symptom is particularly trying for the patient to endure and in very many instances treatment and relief of the symptom is demanded before study and etiological elimination of the basic disease is possible.

There are few symptoms which may be produced by so many widely divergent causes. Headache appears in practically all types of disease. Those developed by tissue change, by infectious agents, by chemical or metabolic factors, by traumatism and by emotional and psychic disorders.

Headache as a diagnostic sign or indication is also of very great importance. It occurs in some of the most difficult diagnostic problems, so that the practitioner is required to study the symptom, in some instances, almost as a disease entity would be considered.

Headache varies greatly in its frequency, duration and intensity. Some people declare they have never experienced headache, others have it so seldom they do not even so much as mention it in their medical histories.

Headache in frequency has only one competitor, constipation. Whatever its cause it may be regarded as a symptom of circulatory imbalance. It may be temporary, as in digestive upsets and mental excitement, or constant in conditions producing dural pressure. The determination of its etiology is frequently difficult, sometimes impossible. Headache occurring in individuals unaccustomed to the symptom requires immediate investigation. On the other hand the occasional one with varying intervening periods of good health lends itself to more detailed study.

Any headache of sufficient discomfort to cause a patient to consult his family physician deserves attention. A thorough study of the condition, and the emergency treated. Then a thorough medical history, and physical examination of all organs or groups of organs, with the aid of our best laboratory apparatus and methods.

After careful elimination, the causative factors may be collaborated and if consultation is needed, the patient may see the specialist and the diagnosis confirmed and his advice obtained. The main cause

having been reached, treatment is resumed.

The mechanism of headache is not easily explained because of difficulty in determining the site of pain.

Internal and exterial pain are mentioned in headache but no one has proof nor a clear explanation of the mechanics of headache. Osler does not attempt to discuss mechanism. However, headache is less common today than twenty-five years ago, because sedatives are more easily obtained, improved refraction methods, improved lighting facilities and ventilation, also better sleeping facilities and outdoor sports.

Classification of headache if needed should result from our interpretation of physiological and pathological study of medical inquiry as to:

Family. Nervous diseases and headache.

Frequency. Interval and regularity.

Character. Sharp, dull, or describe it.

Location. Eyes, forehead, occiput, temples, or vertex, whether deep or superficial.

Intensity. Mild or severe.

Onset. Day or night.

Occupation. Conditions of light and ventilation. Exposure to gas or lead.

Habits. Exercise and diet, tobacco, alcohol, and associated symptoms of the body.

ANATOMY OF HEADACHE

Small Arteries of the Pia. According to the work of Stohr the small arteries of the pia, before they pass into the capillaries, are immeshed in non-medullated nerve fibres, which end in a spiral course. Characteristic of the innervation of the arterioles is the appearance of very complicated endings which do not owe their origin to the nerves of the vessels, but in the nerves found free in connective tissue of the pia which then apply themselves to the walls of the pial vessels. These endings are to be found only in the pia of the cerebrum. The veins have the same innervation.

Nerves of the Pia and Choroid Plexus. In the pia and in the choroid plexus there is a large plexus of nerves which apparently have nothing to do with the blood vessel supply but which course along altogether not physiologically independent of the blood vessels in the connective tissue. First of all, are those at the base of the brain. They are derived from the third, sixth, ninth, tenth, eleventh and twelfth cranial nerves. From the pons there come also to the pia fibres which go from the vagus nerves to the plexus of the fourth ventricle. They form a net, which is especially delicate in the pia of the optic nerve and end in arborization or in club-like swellings.

Sympathetic Nerves of Central Nervous System. The vessels of the pia, like all others are important from one aspect. The substance within the central nervous system is surrounded by sympathetic nerves to which are added parasympathetic nerves from the connective tissue. For the nerves of these vessels there is a separate, sensitive controlling machanism which is especially well developed in the arterioles. These are extraordinarily rich in nerves. They appear therefore to be for the regulation of the circulation of the blood, especially since one has not been able until now to determine indisputably the existence of nerves in the vascular system. It therefore appears that the entire nervous control of the circulation of the blood within the central nervous system lies in the pia.

Causes of Headache from Other Organs. According to Potts the nerve supply of the meninges account for the frequency of headache accompanying disturbances of other organs. The supply of the falx tentorium, and anterior three-fourths of the dura is derived from the fifth nerve: the remaining fourth from the sensory fibers of the pneumogastric. The scalp as far back as the vertex supplied by the posterior branches of the upper fourth cervical nerves. The sensory or descending root of the fifth nerve is in close relation with the origin of the cervical nerves in the cord and also of the cranial nerves in the medulla. The regions of the dura, supplied respectively by the fifth and pneumogastric nerves, overlap. The viscera are also supplied in large part by the latter and in addition the pia receives branches from the third, fifth, sixth, seventh, ninth, tenth and eleventh cranial nerves.

PATHOLOGY OF HEADACHE

The actual changes within the cranial cavity have been difficult to observe and

most theories on the subject are conjectural.

Headache is a symptom and the pathology is that of the disease producing it.

In many of the infectious diseases, and headache is common with most of them, the headache is produced by pressure due to alterations in vasomotor tension. The same is true of the neurasthenic and digestive headaches.

In meningitis there is increased intracranial pressure with pain and relief is experienced after lumbar puncture.

Brain tumor may produce a general increase in intracranial tension with irritation or stretching of the dura.

Whether from inflammation of the meninges, pressure upon the dura or vasomotor change there is a circulatory imbalance which results in an alteration of tension.

CONSTITUTIONAL CAUSE OF HEADACHE

Anemia, due to debilitated state into which many people force themselves by poor environment, improper living, lack of exercise, poor hygienic treatment, may cause severe headache located in various sites over the head. Usually, forehead and vertex or forehead and temples, and sometimes over the entire head. Almost all anemics suffer from some type of head pain, usually due to the true causative factors of anemia such as:

Hemorrhage. Frontal, vertex or occiput, sometimes general, which is a dull headache, and pressing feeling.

In pernicious anemics—82% of the cases have no headache, others very slight.

In chlorosis—patient frequently complains of headache but may have migraine type of darting pain in temples behind the eyes, coming and going at intervals, appearing on exertion, with relief after rest.

Polycythemia. In this condition headache is the most common subjective symptom, being persistent and severe throughout the disease.

Gout. Gouty individuals are not considered to have headaches unless they are the typical American type which borders on neurasthenia.

Diabetes. Waltman states that headache and diabetes do not go together, others differ in opinion. Diabetics do not have migraine attacks as a rule.

Syphilis. Marshall calls attention to the great importance of the early recognition of the headache of syphilis as prompt treatment may save the patient from paralysis or mental breakdown. The intensity, persistence, and nocturnal exacerbations characterize the headache. According to Marshall, the pain is sometimes likened to a weight on the head, sometimes to compression of the head in a vise, at other times to blows on the head with a hammer. The intensity and long duration are of more importance in diagnosis, the attacks sometimes occurring for several years before the supervention of further cerebral trouble.

Meningitis and Syphilitic Arteritis Cause Typical Headache. While periostitis and nerve pressure may give rise to headache, meningitis and syphilitic arteritis cause the typical headache described above. It is diffuse, intense, persistent, and worse at night. The uremic headache due to urinary insufficiency from syphilitic nephritis has not the characteristics of the true syphilitic headache.

In the secondary stage of syphilis, headache may be in active association with the eruption. It is apt to be occipital and to increase in intensity toward night. The greater part of the day may be comparatively free. The headache may radiate over the entire head or may be limited to one side of the occiput. The intensity shows great variability, from a mild discomfort to a racking headache which nearly crazes the victim.

Headache in general paralysis. This type of patient do not complain much of headache except in the early stage of the disorder when, however, the pain is variable but rarely intense.

The locations of syphilitic headache, which is usually dull in character may be bitemporal at the vertex, occipital, or frontal, the frequency of location corresponding to the order of enumeration.

In vascular neurosyphilis, headache is intermittent, often monosymptomatic, persistently recurrent, often but not always worse at night, dull and stupefying or acute, increased by mental effort and physical work.

In basilar meningitis, headache is usually severe, pain deep in the eyes, sensitive to percussion over the brows.

In meningitis of the convexity, headache is diffuse or localized, often boring,

frequently but not invariably, worse at night. Patient may seem deafened. This is often confined to the upper parietal area where there is very frequently circumscribed tenderness to pressure and percussion.

Headache in Renal Diseases. There is a general belief among physicians that most of the renal diseases causes headache. This idea pervades the laity and often brings the victim of headache to the physician because of a fear that the pain may be due to kidney disease. The relation of headache to hypertension bears a similar position: as in hypertension headache may be a prominent symptom, it may be mild, or entirely absent.

Osler said that headache is frequently an early evidence of acute nephritis, and in chronic nephritis the most frequent form of pain is headache. In the latter, the headache may come on insidiously but the attacks of pain grow more severe and more frequent. No one kind of headache is characteristic.

In acute nephritis, the early symptoms of headache, as the uremic intoxication increases gives rise to a distressing, almost unbearable headache. This is explained by the cerebral edema or (wet brain). Generalized headache or pressure headache is of this character.

In chronic nephritis, the toxic symptom of headache occurs during the hypertensive stage. This being a congestive condition. The pain is located in the occipital region, present on waking, wearing away after exercise. It is dull, generalized and persistent.

Eclampsia. In pregnancy, any headache should arouse our suspicions.

Movable kidney. We have headaches with other ill defined symptoms.

Stone of kidney. Mild headache only.

HEADACHE IN INFECTIOUS DISEASES

Constant symptom during prodromal stage. Headache is an almost constant symptom in the infectious diseases, especially during the onset or prodromal stage. Whether headache is present or not depends upon the nature of the onset as well as the disease for in some patients the characteristic subjective symptoms may be so masked by an overwhelming toxemia that they feel and remember little of the illness. In some, it is the outstanding feature of the onset: we say onset because headache is not a striking symptom in most infectious diseases after they have become well established.

The early symptoms of acute infectious diseases are so familiar: fever, headache, backache, muscle pains, lethargy, disturbances of the digestive tract, that an immediate diagnosis is often difficult: frequently impossible.

Pneumonia. At onset the usual features of fever and headache. Osler says that if the patient is seen shortly after the onset, he has the usual features of an acute fever and complains of headache and general pains.

Influenza, for example, is more frequently complicated by pneumonia than any other disease, and the prevalence of headache in influenza is well known. In those cases of pneumonia which suggest typhoid fever at the onset headache may be a prominent symptom. Furthermore, it is true of pneumonia as in most other infectious diseases, that if there is present any chronic condition (of the eyes, nasal sinuses, et cetera), headache would be aggravated by the circulatory changes produced by the fever and other characteristics of the onset of the infection. Obviously, if pneumonia occurred with a typical onset in a patient previously in perfect health, we could assume that the headache was a part of the symptom-complex.

Typhoid Fever. Headache is a very constant early symptom of typhoid fever. Often the patient has had headache for several days or even weeks, gradually becoming more severe, and has vomited several times. The headache at first is general, but later becomes frontal. In the second and third weeks, as the mental stupor increases, headache disappears, or at least the patient is no longer conscious of it.

Typhus Fever. Intense frontal headache and abrupt onset.

Pyelitis. Intermittent alternate, intense frontal headache with other symptoms.

General Sepsis. Intermittent type—variable headache.

Focal Infection. Gives an intense headache. Occipital.

Acute Rheumatic Fever. Usually causes severe occipital headache but when asso-

ciated with migraine and chorea we are liable to find paroxysmal headache of a different nature.

Nodular Headaches (rheumatic). Have severe and persistent occipital headaches sometimes involving the entire head. These do not cease at night and are usually more severe in the recumbent position.

Cerebrospinal Fever. Abrupt onset with severe headache. Its onset is very abrupt and except in those cases which are ushered in with delirium and loss of consciousness, severe headache generally accompanied by vomiting is the rule. Headache is often occipital, and is usually constant and agonizing.

T. B. Meningitis. After a prodromata headache may begin rather suddenly, with varying intensity. On the other hand, aseptic meningitis can come on with intense headache, sometimes frontal and sometimes occipital.

Acute Poliomyelitis. In this condition, headache is not so severe but is usually occipital.

Lumbar Puncture used in diagnosis may cause a delayed headache, usually frontal, maybe occipital. Throbbing type, which is aggravated by a sitting position.

Epidemic Encephalitis. Headache is not a striking symptom.

In Scarlet Fever, headache takes the part of any infectious diseases. Trench fever may have a splitting, severe headache.

Malaria gives us a reflex neuraligic pain severe and remittent in type dignosed by blood examination. *Tetanus,* mild prodromal symptom of headache with back pain and muscle stiffness.

Hypertension—frequently a cause of headache associated with nephritis. In malignant or organic type excruciating dull headache intermittent or continuous, affecting the whole head, centering especially in the occiput. Worse in the morning, awaking the patient in the early hours and wearing away with increase of circulation after activity. When this occipital headache is refractory and intense it is ominous of the appearance of cerebral complications sooner or later. Finally, it may assume the form of ophthalmic migraine and remain an isolated phenomenon a long time and simulate complications such as aphasia, hemianopsia or transcient paresis.

HEADACHE IN CARDIAC DISEASE

Evidence of circulatory imbalance. Since headache is, in the majority of cases, an evidence of circulatory imbalance, it might be expected to occur in many of the forms of cardiac disease. On the contrary headache as a symptom in circulatory disorders is unusual. It may be said that it is less common than in most other conditions.

Congestive Heart Failure and Arteriosclerosis. There are two cardiac conditions where headache is commoner than any others: congestive heart failure and arteriosclerotic heart disease. In the former it occurs when there is venous stasis. Stasis was produced experimentally by Cushing, who increased the cerebral pressure by putting a cuff of a blood-pressure machine about the neck and filling it with air which interferred with normal circulation to the head. Arteriosclerotic heart disease may cause headache but it is frequently absent.

Aortic Regurgitation. Osler mentions headache in aortic regurgitation and mechanically it should occur. The throbbing vessels and often increased systolic pressure should be sufficient cause. It is surprising that headache is not more frequent. Since aortic regurgitation, especially when due to syphilis, is generally accompanied by more or less arterial sclerosis, headache might easily be due to the changes in the cerebral arteries. A forceful systole driving the blood stream into resistant arteries adds to the possibility of producing and increasing the symptom.

In compensated mitral stenosis it is not common and if it does occur is merely a part of the generally impaired health.

In any condition which would result in cerebral anemia, such as tachycardia, auricular fibrillation or flutter and myocardial fibrosis, headache might be expected but seldom occurs from any one of these causes alone.

HEADACHE IN DISEASES OF THE DIGESTIVE SYSTEM

Not an outstanding symptom. Headache is not an outstanding symptom in disease of the digestive system. In the important ones, such as carcinoma and ulcer, headache does not occur so long as reasonable functioning power is maintained. When vomiting or obstinate constipation occurs in any of the major gastro-

enterological diseases, headache appears as it might from these symptoms when produced by benign disturbances.

Constipation is a very common cause of headache and should be investigated in every patient complaining of the symptom. It is often a dull frontal pain.

Indiscrete eating and food idiosyncrasies may cause headache. Eating when there is bodily fatigue may be a cause, especially in persons with hypertension.

Gastroenterologists are consulted by patients because of periodic attacks of headache and vomiting but these frequently belong to the migrainous class.

HEADACHE CAUSED BY DRUGS, CHEMICALS AND POISONS

(*Familiarity with toxicology necessary*). That certain drugs cause headache is too well known to dwell at great length upon the subject here. Text books upon toxicology and the action of drugs give excellent accounts with which the physician in general and hospital practice must be familiar. In private practice there is the occasional case but familiarity with the effects of drugs taken in poisonous doses may enable the practitioner by prompt action to save life.

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NEUROLOGICAL HEADACHE

NED R. SMITH, M. D.
TULSA

I believe I can best contribute to this symposium by roughly indicating my procedure when confronted by a patient whose chief complaint is headache.

The first step is to make sure what the patient means by "headache." I ask for the location of the discomfort and make an attempt to have the patient describe the pain in his own language if possible. By this method I have learned that everything from hysterical clavus to smarting of the eyes or interscapular paraesthesia extending up to the base of the occiput may be called headache. Once the exact nature of the complaint is clearly defined, further history varies according to the trend indicated in any specific case. If the headache suggests migraine, family history is carefully gone into, not necessarily for a history of migraine only, but for its equivalents as well. Factors that might provoke the attacks in the patient's diet, habits, or environment are considered. In females the age at time of onset of the headache, and any tendency to association with the periods is a most important point and at times will be the deciding differential factor in a diagnosis between headache of the migrainous type and that due to pituitary insufficiency during menstruation. However, there are certain migraines that are not thus linked up with the periods that will spontaneously cease with the menopause.

The neurological diagnostic possibilities in the ordinary headache are entirely too numerous to even enumerate. Brain tumor probably leads the list, especially if the patient be under twenty years of age. Throughout the middle age periods one still must consider brain tumor, but syphilis of the central nervous system is more likely to be present. In the later periods of life arterio-sclerosis requires serious consideration as the etiological factor, and not necessarily need be associated with hypertension. I believe the larger proportion of headaches are reflex in origin. The best reason for this belief outside of one's experience is evidenced by the angles from which the subject is being approached in this symposium. I have occasion to refer cases for glasses, pelvic corrections, etc.

I am thoroughly convinced we all must continue to regard headache purely as a symptom and not a disease entity. It is probably true that most of the headache that I see is of the functional type, occurring either as the sole symptom or as a component of some form of the psychoneuroses. I usually see these patients as referred, and unfortunately for the patient altogether too often after the experiment of glasses, sinus punctures, hysterectomy, etc., has been tried. This last remark is motivated solely by the strong belief that the most important thing for the maintainence of our profession in its historical and proper social position is for each of us to earnestly strive to be better physicians and raise our batting average for correct interpretations of the problems

that our patients present to us, and pay little or no attention to talk about state medicine, and unhappy conclusions of self-appointed busybodies about the cost of medical care.

If you do not believe in the reality of the psycho-neuroses, it would then be a waste of your time and mine to discuss headache from that standpoint. It can be demonstrated to any open-minded person that most any symptom a human being is capable of expressing may be on a psycho-neurotic basis. It therefore follows that in headache we many times give serious thought to this possible interpretation. If now in such a psycho-neurotic individual their attention has been fixed through the physician's diagnosis and therapeutic efforts upon some somatic region, the problem of the neuro-psychiatrist has been made doubly troublesome, because before he can attempt psychotherapy the patient must be convinced that their trouble is not organic or reflex; in other words, they must lose their fixation and start with a clean slate. I hasten to remark that astigmatism, colitis, or retro-flexed pelvic viscera can exist in a neurotic and that their correction is always indicated, but with some conservatism as to possible relief of definite coincidental psychoneurosis.

The diagnosis of a psycho-neurosis of any type should be made on a positive basis and not by exclusion. At times in the field of psycho-pathology, just as in other situations, the evidence may be unsatisfactory for a definite conclusion. There is where we employ team work to our mutual help and comfort. Just for example, in a suspected hysterical individual with visual complaints, I feel much more secure when the oculist returns a report showing tubular fields of vision and no eye pathology.

In short the neurologist endeavors to approach the problem of headache with a wholly open mind as to its etiology and underlying pathology. If after taking a careful history and making a thorough examination, there is lack of evidence for an organic basis; the personality of the patient, which is always under scrutiny in the office of a neuro-psychiatrist, must be taken into consideration. Regardless of who the physician may be, never lose your usefulness to your patient by suggesting their headache is imaginary, when in fact it is probably on a neurotic basis. It is still a headache to the patient.

GYNECOLOGICAL HEADACHES

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I am sure that you men of this special section will not take issue to the statement that pelvic disturbances are very common causes for headaches and until the pathological condition originating in the pelvis is corrected, the patient will continue to complain of her symptom of headache. We will shamefully admit, that at one time when gynecology was new as a specialty, it was unwise for a woman complaining of headaches to seek aid, providing she had the least hope of conserving her pelvic organs. Fortunately this period has passed and gynecologists of today are very careful in offering a patient relief of this symptom from surgical intervention and then only after a diagnosis has been made through careful investigation and processes of elimination. The fact still remains, however, that women are being operated yet today for the relief of headaches *without proper study having been made.* Of course they return with their same headache which is often exaggerated and it is such surgery as this that wrecks the confidence of our patients but the specialty of gynecology will not accept these mistakes. They usually have been operated by the general surgeon.

There are two types of headaches referable to the pelvis which I wish to discuss in the short time alloted to this paper. First I want to call your attention to the headache associated with a malposition of the uterus. Each and every one of you men can readily recall women who a few years ago were active, pleasant and healthy but now after the birth of two or three babies or a severe pelvic infection are nervous, unreasonable and whose personalities have been completely reversed as the result of constant pelvic pain, backache and headache. I am sure you would not be suprised to find your special examination entirely negative and I feel quite confident you would encourage this woman that she should place herself under the care of a gynecologist. The most common location for this headache is the occipital region and is usually associated with pain downwards from the occipital protuberence in the cervical muscles, to about the level of the sixth cervical vertebrae. It may be a frontal headache, across the top of the head, a band

like constriction about the head or a complete generalized headache but the most common location for this type has its beginning about the occipital region. The exact explanation for these reflex headaches arising from such a distant organ has not been clearly established and in fact many reliable authorities deny the connection but to me there is no doubt that such does occur. We must not lose sight of the fact that it may be some hormone disturbance as a result of an abnormal circulation as well as an interference of nerve conduction or nerve relationship of the autonomic and sympathetic symptom in the pelvis. Whether such an assumption is correct or not, the fact still remains that these headaches develop after the occurrence of the pelvic pathology and that they can be relieved by the proper treatment. You will be surprised by the relief obtained for these women by the insertion of a well fitted pessary or a firm vaginal tampon and it is through these therapeutic tests that one is able to separate the headache of pelvic origin from that of neurasthesia. When deprived of the use of both of these measures, a hot douche followed by five minutes in the knee-chest position will often afford the patient relief and give her a good night's rest which she would not have been able to obtain otherwise. Such patient is a candidate for surgery and if the pelvic diaphragm is correctly reconstructed and the heavy malposed uterus suspended, she can almost be promised relief from her headache. Such headaches so closely resemble the headache of the neurasthenic that one must be very careful in arriving at a correct diagnosis before recommending surgery for their relief.

The other type of headache I wish to refer to in this paper is the periodic headache which occurs with regularity in the menstrual cycle. Very few women experience a feeling of well being during their menstruation and their physical and mental disturbances may be manifested in various ways. Headaches occurring at this time are common but the dreaded so-called premenstrual headache has an entirely different basis. Within the last few years it has been definitely established that the pituitary body is the driving force of the ovary and that such headaches are the result of an overworking gland which has become hyperemic or edematous in its attempt to maintain the proper endocrine balance that it gives the patient a similar headache of a pituitary tumor. They usually arise just within or about one or both eyebrows and described as coming out through the temples and also through the top of the head. They are severe, incapacitating, often accompanied by vomiting, not relieved by ordinary headache remedies but disappear with the onset of the flow. There is considerable yet to come from the study of the female sex hormone but this seems to be a fairly well established fact. These headaches can frequently be relieved within an hour by a hypodermic injection of the substance of the anterior lobe of the pituitary gland, antuitrin. They can frequently be prevented by the administration of the female sex hormone in the form of theelin, progynon or amniotin for a week prior to the expected date for the headache. The antuitrin apparently supplies the body with the material that the pituitary gland is so courageously attempting to produce in sufficient quantities to assure the production of the optimum amount of stimulation to the ovaries and hence a normal period, while the latter relieves the pituitary body of the necessity for overwork as the blood stream has been supplied with the end result of the ovarian output. Again this calls for a very thorough study, close observation, careful co-operation and often a juggling of various hormones before the proper one is found that will give the desired relief. It is also on this same basis that we see the terrible headaches so often encountered in the woman nearing her menopause. With the climacteric the headache disappears because the pituitary gland no longer is called upon so vigorously. These headaches, likewise often yield to the proper endocrine therapy.

In closing I will warn you not to forget the toxic headache that may arise from inflammatory diseases of the adenexa which also may cause headaches by producing changes in the erectile tissue about the nose which is frequently experienced during menstruation. Even the slightest ulceration or polypoid formation of the endocervical tissue is often responsible for continuous headaches. But again allow me to remind you that the gynecologist has at his disposal several diagnostic tricks and therapeutic measures which permits him to fairly well establish a differential diagnosis of headaches of pelvic origin from those arising from other sources. Also that we are now able

to cope with many of these terrible bitemporal pituitary headaches occurring at some definite time in the menstrual cycle and in all probability we will have more to offer for these women within the next few years.

OPHTHALMOLOGICAL HEADACHE

C. M. FULLENWIDER, M.D.
MUSKOGEE

It has long been known that the eyes are a frequent source of headache. So widespread is this knowledge, that the sufferer frequently makes his own probable diagnosis and applies directly to the oculist for relief.

Ocular headaches, may be classified under three heads: 1. Those caused by refractive errors. 2. Those caused by muscular imbalance. 3. Those due to inflammatory conditions of the eyes.

The first and second are frequently associated in the same case. In the third variety the underlying inflammation is the important thing. The headache is a secondary matter and disappears as the inflammation clears up. Its consideration does not properly belong here.

Ocular headaches are caused by fatigue of the ocular muscles and of the nervous apparatus supplying these muscles. The normal eye is so constructed that distant vision requires little effort on the part of either the intra or extra ocular muscles. Close vision requires muscular effort, but only of such a degree that the normal eye, sustains it for any reasonable time, without undue fatigue. Certain errors of refraction, however, add greatly to the load. Hyperopia requires accommodative effort to secure clear vision even at distance and this increased work must be added to the normal effort required in near work. Astigmatism excites a constant effort on the part of the ciliary muscle in the attempt to secure clear vision.

Functionally the two eyes are not independent organs but rather, are each a member of a delicately adjusted and highly complicated visual apparatus. In order to secure binocular vision each eye must be turned so that the image of the object viewed will fali exactly on the macula. This is accomplished by the extra ocular muscles, regulated in turn by the fusion faculty. Any failure of this complicated neuro-muscular apparatus to function properly, results in diplopia. This is so intolerable to the normal individual that any possible innervational or muscular energy will be expended, in an effort to correct it. This excessive drain on muscular and nervous energy soon results in fatigue and it is this excessive effort that gives rise to headache.

The acts of accommodation and convergence are closely associated. A definite amount of accommodation is accompanied by a corresponding amount of convergence. More strictly speaking a definite amount of innervation to the muscles of accommodation is accompanied by a corresponding amount of innervation to the muscles concerned in convergence. One diopter of accommodation in normal eyes calls for one meter angle of convergence. Any anomaly of refraction or of the lateral muscles upsets this relationship and puts an extra burden on the nervous apparatus. If the eyes have a hyperopia of two diopters they will require for work at thirty-three centimeters, five diopters of accommodation, while the muscles of convergence will require only three meter angles. If the eyes are two diopters myopic they will require only one diopter of accommodation while three meter angles of convergence are required. As the tendency of the nervous system is to supply equal degrees of stimuli to the accommodation and to convergence, it is evident that there is a loss of balance between these two functions. Simularly if there is an anomaly in the strength of the lateral muscles or in their innervation, the relationship is disturbed. The effort to compensate for this imbalance produces abnormal fatigue.

The relationship between the vertical muscles and accommodation is not so close but since the duction power of these muscles is rather low, small amounts of imbalance are apt to produce marked headache.

In cases of eye strain headache, the history is usually very suggestive. The headache usually comes on after prolonged use of the eyes for near work, after a car ride, a picture show or some rather trying use of the eyes. It is seldom present on arising and seldom wakes the patient at night. The pain is usually located in the frontal and temporal regions but may involve any part of the head. Headache following use of the eyes need not necessarily be due to trouble in the eyes them-

selves. In frontal or ethmoid sinusitis, the bony attachment of the pulley for the superior oblique, is tender and the traction on this muscle will produce headache. Occasionally an attack of migraine is precipitated by the use of the eyes.

The diagnosis of ocular headache rests finally on the careful examination of the refraction and the muscle balance. The refraction should be done under cycloplegia in all patients who are not presbyopic and cycloplegia may be required in some of the younger presbyopes. Except possibly in the case of myopes, glasses should not be prescribed from the results of the static refraction alone. As in all other fields of medicine, the individual patient must be considered. One may have a vigorous ciliary muscle and a well balanced nervous system and will be most comfortable with a comparatively small part of the spherical correction. Another may accept or may require practically the full amount. For this reason the patient should be required to return after effects of the cycloplegic have disappeared, for a recheck of the refraction and determination of the muscle balance while wearing the new correction. In practically all cases the full cylindrical correction should be given and great care should be taken in determining the correct axis. The prescribing of spherical correction requires experience and judgment. As a rule full correction is given to myopes. In the hyperope, the amount will vary with the age of the patient, the stability of his nervous system and his ocular muscle balance. In young people in good health, the ciliary muscle will usually take care of a considerable degree of hyperopia with ease and comfort. In fact when it becomes necessary to force a near full correction on such a patient, it is often difficult to induce the ciliary muscle to relax sufficiently to obtain good vision. As the patient approaches presbyopia he requires and accepts more nearly the full correction. It is a common experience to find a patient who has been given the strongest sphere with which he can obtain clear vision, returning at intervals of a few months requiring stronger spheres until finally practically the full correction is worn. Occasionally a patient will be seen who accepts no more than half or two-thirds of his full spheric correction and who goes along comfortably for years with no addition.

The cases which are suffering from the effects of muscular imbalance often are the most difficult to relieve. Hyperphoria is more apt to give trouble than are the lateral imbalances. The vertical muscles have small ducting power and little can be done by training. One or two diopters of hyperphoria can sometimes be borne without discomfort, but higher degrees often require the wearing of prisms. Fortunately prisms are usually well borne and afford relief in the vertical imbalances. It is seldom necessary to use full strength prisms. Usually a prism one or two diopters less than full strength worn base down over the hyperphoric eye or divided between the two eyes will give relief. It is however usually a mistake, except in cases of high degree, to give a prismatic correction until glasses minus the prism have been worn for a time. Many cases of hyperphoria as well as the lateral phorias, will disappear after the glasses are worn for a short time.

The presence of lateral phorias have an influence on the prescribing of spheres. Most of them are of the accommodative type and are markedly affected by the correction of the ammetropia. Two or three diopters of esophoria are very common and seldom cause symptoms. Frequently much greater amounts are symptomless. Accommodative effort is accompanied by increased convergence, therefore the sphere should be the strongest that the patient can wear with comfort so that the necessity for accommodation will be reduced to a minimum. On the other hand in exophoria accommodation should not be held in abeyance. Plus spheres should be kept down in strength and in myopia full correction should be given.

A large percentage of the phorias will disappear when the refractive error is corrected. When they fail to do so prism and stereoscopic exercises may be tried. These frequently are of great benefit in cases of exophoria but of far less value in esophoria and hyperphoria. Prisms for constant wear are seldom of benefit in the lateral phorias but will occasionally give relief. The so-called essential types of phorias are a much more difficut subject. In these there may be some actual weakness or defect in the muscles but the trouble seems to be largely one of disturbed innervation. Medical treatment, muscle exercises and surgery are all resorted to in these cases, but the results are inferior to those obtained in the accommodative type. As stated before, headache due to

eye strain, is a symptom of muscular and nervous fatigue. The condition of the nervous system has a very important bearing on the production of such headaches. An individual with a well balanced nervous system can often use his eyes for long periods and in spite of a considerable refractive error suffer little or no inconvenience, while another of the neurotic type will suffer severely from an error of less magnitude. The type of refraction also plays an important part. Astigmatism, especially at an oblique or horizontal axis is much more prone to cause headache than is a spherical defect. High degrees of ammetropia frequently fail to cause headache, because they are so great that no effort of accommodation can give clear vision and so no effort is made.

It is unquestionably true that many cases with slight errors of refraction are given glasses when none are needed, but it is also true that a few rare cases with an unstable nervous system are relieved by correcting a very small astigmatic or spherical error. Most of these cases show as great an amount of error without the cyclophegic as they do with it.

The oculist's duty to the headache patient is not ended when he has finished the refraction. A careful ophthalmoscopic examination should be made as a matter of course. Frequently an optic neuritis, a retinal exudate or some other intraocular lesion points to a systemic disease which as yet had produced no other symptoms sufficient to cause the patient to seek medical advice.

In cases in which no explanation of the headache is revealed by the refraction and examination of muscle balance, a check of the visual fields is worth while. A glaucoma in the prodromal stage will often cause headache and can be very easily overlooked. Occasionally the fields will show a defect which calls attention to a brain abscess or a brain tumor which had given little or no symptoms but headache. If the ophthalmologist will keep in mind the fact that in a certain number of cases the eyes play no part in the causation of the headache but do present lesions which indicate its origin, he can greatly extend his usefulness to the patient and his physician.

HEADACHE OF NASAL ORIGIN

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TULSA

Headaches arising from nasal pathology should be subject to very exact diagnosis. Often too much clinical evidence is taken into account on insufficient findings which makes this field subject to many errors in diagnosis, perhaps more so than any other branch to be discussed at this symposium.

The patients stress symptoms relative to their nose and the word "sinus" has become so common among the laymen and is usually so badly dreaded that people with headaches are very easily convinced that this is their trouble when the general practitioner or the uninformed nose and throat doctor agrees with them. There is no reason why this should not be a dreaded disease, because each person with whom you talk about sinus trouble has a friend who has had numerous operations with no relief and a return of more severe headaches.

I am going to give you hurriedly my observations and views on the ordinary conditions of the nasal architecture, then dwell more at length on nasal neuritis.

As to headaches arising from deformities of the nasal septum, I am certain that this is a rare phenomenon. Extreme deformities might tend to cause considerable aggravation during an acute process of the ethmoids by preventing proper ventilation and stagnating secretions, contributing factors in the causation of headaches. Ordinarily, however, they have no significance whatsoever except for symptoms of nasal obstruction, and I am seriously doubtful of the frequency of this.

The anterior group of sinuses is not the seat for headaches with the exception of the acute suppurative processes where the periosteum is involved. Headaches occur in this group of sinuses when acute exacerbations of a chronic condition is manifest. I do not believe there is a vacuum sinus headache except perhaps in very rare incidences.

The posterior ethmoids and sphenoid are the most common agents of headaches in the sinus group because the acute processes do not tend to resolve themselves readily by reason of their poor natural ventilation and drainage. Infection tends

to involve the mucosa, which subject it rather frequently to acute exacerbations. Here, again, all other causes for the headache should be ruled out first and then the sinus confirmed with properly taken X-ray pictures. Headache, here, is usually referred to the occipital region, between the eyes in the midline, and behind the eyeball on the infected side.

Allow me to again clarify my views in a short summary on sinus headaches. I fully realize that an acute infection of any sinus can cause a headache as well as the exacerbations of chronic conditions. These conditions are easily diagnosed; the headaches we are interested in are the more obscure ones.

The term headache to most people is a pain in any region of the head, whether it be frontal, occipital, temporal, parietal, or general; whether it be a sharp, dull aching or throbbing, inside or outside the cranium.

The headaches that are of nasal origin, except as above outlined, are extracranial, which fall under the general heading of neuritis.

First I like to consider the nerves of the nose as a whole. The nasal mucosa is very rich in sensory nerve endings, so rich in fact that we are often led to believe that it is the seat of trigger areas which transmit reflex sensations and pains to different places in the head. Sluder (in 1917), described a headache syndrome which consisted of pain behind the root of the nose, in the eyes, over the side of the face and cheek bone, often radiating to the back of the head and down the occiput to the back of the neck and occasionally to the shoulders and even lower; this he described as neuralgia of the sphenopalatine ganglion. Occurring with this syndrome, he often found exaggerated nasal pathology in the posterior sinuses and reasoned that the pain was a neuritis of sphenopalatine ganglion which occupies the upper part of the pterygo-palatine fossa. It is a small reddish gray ganglion suspended from the maxillary nerve by the two sphenopalatine branches which constitute its sensory roots. The motor and sympathetic roots of the ganglion are derived from the nerve of the pterygoid canal. The branches from the ganglion are seven in number: the pharyngeal, the three palatine, the posterior, superior, and the lateral nasal branch, the naso-palatine nerve and the Rami orbitales with two or three sensory roots which pass directly from the lower border of the maxillary nerve to the upper border of the ganglion. These fibers for the greater part are dendrites of the cells of the gasserian ganglion.

The great deep petrosal nerve represents the association cord between the superior cervical sympathetic and nasal ganglion. Many of its fibers end in arborizations around the stillate nasal ganglion cells from which, in turn, axones pass to blood-vessels by way of the ganglionic branches of distribution. The ganglion lies in the sphenomaxillary fossa, close to the sphenopalatine foramen, and embedded in the mucosa of this region two to seven millimeters.

I have given a short, anatomical resume of the ganglion to clarify some of its phenomena.

Most authors would lead us to believe this type of headache to be very typical in its occurrence. First occurs coryza of some type, later on comes pain at the root of the nose, in and about the eye, the upper jaw and teeth, extending backward to the temple and about the zygoma to the ear; then backward the pain pushes its way to the occiput and neck, even to the shoulder blade and shoulder and may, in severe cases, go to the arm, forearm, hand, and even the fingertips. It has been my experience seldom to see a case with all these manifestations; my records reveal only nine. There is usually only one or two areas involved, the most frequent sites being the temporal and extending behind the mastoid; this is true in fifty-three cases. Pain in the root of the nose and eye region was found in nineteen cases, the occiput and neck region in forty-four cases, in the neck alone eighteen cases, the mastoid alone in eleven cases, the temporal alone in fourteen cases. Any patient complaining of his teeth and jaws paining considerably was found to have some form of sinus disease. Pain involving the mastoid and occiput seemed the most severe and the occiputal type the most difficult to relieve. Most all cases show some low grade chronic infection in the sinus or throat, the sinus involvement being the most frequent in the posterior group of cells and not sufficient to call for any radical treatment and the symptoms are readily relieved by local measures.

The manner in which this pain occurs

in isolated areas has led me to assume that in the large majority of cases the entire ganglion is not involved, but only portions of its trunk which give certain sensory supply over the head and neck.

It is my belief that this is one phase of headache which is often treated as if it were of some other type and from some other cause. It is one of the most severe headaches people experience and it does not respond well to the usual headache remedies and lasts over a period of weeks and months, if not relieved as it should be.

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HEADACHE FROM THE STANDPOINT OF THE OTOLOGIST

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In taking up the subject assigned to me in this symposium, I judge it was the intent of the chairman that it should not deal with an ordinary earache, from whatever cause but rather to the more generalized head pain resulting from an acute or chronic ear infection. If so, one must presuppose a middle ear infection, either acute or chronic, spreading or being transmitted to some adjacent tissue or structure causing a headache, that must be differentiated from one caused by infection or disease in some other portion of the head or body.

The time allowed for this paper will not permit a detailed discussion of all complications of ear infections causing headache but rather the most common ones in the order of their frequency as I interpret them, with enough symptoms and findings given for the purpose of diagnosis.

MASTOIDITIS

1. Any case of purulent otitis media may result in an infection of the mastoid, should pain develop in an infected middle ear that is draining freely, a mastoid involvement should be suspected and a thorough examination for swelling, tenderness over the mastoid, differential, white cell count and X-ray should be made.

In adults the mastoid may be extensively involved without oedema or tenderness over same but show extensive cloudiness of cells when X-rayed.

The pain or headache of the average typical mastoiditis when not draining freely, is usually described by the patient as throbbing or pounding, behind the ear in most cases but sometimes over a wider area, around the ear and side of head.

2. Suppurative labyrinthitis is always secondary to an infection elsewhere in the body, usually within the middle ear, the spread of infection from the tympanum may occur by one of several routes.

a. By erosin of bone at some point causing a labyrinthian fistula.

b. By extension of the inflammatory process by way of minute anastomotic vessels without the production of a demonstrable fistula.

c. Trauma during a radical mastoid operation in which the stapes was injured.

Of conditions within the middle ear causing invasion of the labyrinth, probably all writers agree that the presence of a cholesteatoma is the most potent factor.

Jansen some years ago reported a series of 121 cases of suppurative labyrinthitis in which cholesteatoma was the apparent cause in 71 cases. While either an acute or chronic suppurative otitis media may cause a labyrinthian infection, by far the greater number of cases result from the chronic form.

According to Hinsberg and Von Stein suppurative labyrinthitis results in about two percent of suppurative middle ear infections and that it is their belief that infection of the labyrinth is a more frequent complication of tympanic suppuration than a sinus thrombosis, meningitis and brain abscess combined and that a very large percent of all cases of meningitis and brain abscess following middle ear disease are in reality secondary to an intermediate suppurative process involving the labyrinth.

The early symptoms indicating a labyrinthian involvement are vertigo, loss of hearing, nausea, vomiting, nystagmus, ataxia a deep seated earache and pain in the vertex or occipital area.

3. Extradural abscess is the most common of all the otitic inflammations of the meninges. It occurs at all ages and is found as a complication of both acute and chronic middle ear and mastoid suppurations but Jansen finds it more often associated with acute than with chronic sup-

purations, however, it is frequently found in a chronic otitis, with accompanying sclerosis of mastoid, resulting in necrosis of roof of the attic of middle ear.

In the coalescence type of acute mastoiditis a pressure necrosis will cause distruction of the tegmen with formation of abscess.

In the acute hemorrhagic mastoiditis the infection may be transmitted through veins and thrombus formation which breaks down forming abscess. These extradural abscesses are usually accompanied by increasing temperature and severe headache of a pounding nature.

A localized meningitis may develop during or following a mastoiditis and a small or following a mastoiditis and small ex-extradural abscess, manifested by sixth nerve or abductor paralysis accompanied by inflammation of gasserian ganglion, known as the "gradenigo syndrome," the dura over the petrous pyramid in the seat of an inflammation involving Dorello's canal which transmits the sixth cranial nerve.

The diagnosis presents no difficulty, due to paralysis of external rectus muscle, double vision, severe pain over distribution of the fifth nerve, and increased spinal fluid pressure, which is clear and sterile for bacteria.

4. General meningitis of otitic origin manifests itself systemically by high temperature, prostration, anorexia, extreme restlessness, profound sepsis and severe headache.

Local manifestations are rigidity of neck and spine, positive Kernig and Babinski, and ankle clonus. The spinal fluid is usually increased in pressure, cloudy, increased cell count with the presence of bacteria.

5. Otitic brain abscess is secondary to an acute coalescent mastoiditis or diffuse suppurative labyrinthitis by erosion of the inner plate with direct extension of infection and formation of an intercranial pus pocket or metastatic by an infected thrombus from an acute hemorrhagic mastoiditis which is transmitted through mastoid veins or capillaries to brain.

Neuman's statistics show that aural suppuration associated with cholesteatoma furnish the largest percentage of cerebellar abscesses.

The early general symptoms are severe headache, chills, vomiting, subnormal temperature and evidence of a protective meningitis in spinal fluid. Eggleston states that the finding of a more or less constant subnormal temperature is definite evidence of a brain abscess.

Symptoms of increased intercranial pressure due to extension of abscess are slowing of pulse rate, projectile vomiting, increase in blood pressure, ocular muscle palsies, coma and papilloedema; the latter is more apt to be present in abscess of the cerebellum, causing increased pressure by closure of foramina in the fourth ventricle than in tempora sphenoidal lobe abscess.

Conclusion—That headache is a symptom that is present in most all complication of otitic infections.

That headache alone is not diagnostic of any of the complications of middle ear disease but the location and type of same, taken in consideration with the history, X-ray, blood and spinal fluid finding, subjective and objective signs and symptoms, should aid in the diagnosis.

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PATHOLOGIC BASIS OF SYMPTOMS IN NEPHRITIS

J. P. Simonds, Chicago (Journal A. M. A., March 5, 1932), differentiates two type of nephritis: (1) that in which the essential damage is to the secretory portion of the kidneys, and (2) that in which the smaller arteries and arterioles are characteristically involved. This second type is not so much a primary disease of the kidneys as a generalized disease of the arterioles of the body. The basic changes in the first type are degenerative and exudative (inflammatory) resulting in increased permeability of the renal filter without retention of nitrogenous products but with loss of albumin in the urine, depletion of blood serum albumin, retention of crystalloids in the tissues and edema. In the second type the fundamental pathologic change is a hyperplastic sclerosis of the smaller renal arteries and arterioles with narrowing of their lumens, (1) reducing blood pressure and blood flow in the glomeruli below that required for adequate filtration and (2) interfering with the nutrition and therefore with the function, of the tubules, thus causing retention of nitrogenous waste products. More elaborate classifications are confusing because they attempt to make separate entities and types out of (1) different stages of the same morbid process or (2) different combinations of the same fundamental unit pathologic lesions. The author believes that if due recognition is given to the fact that nephritis is a progressive disease, it is possible, by means of this simple classification, to make a reasonably satisfactory correlation between its clinical manifestations and their pathologic basis, and to elaborate the principals of rational treatment.

VENOUS PRESSURE AND ITS CLINICAL SIGNIFICANCE*

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From the time of Harvey's study of the circulation of the blood in 1628, and the investigations made by the clergyman, Stephen Hale, on the blood pressure changes in the crural artery of a mare, as well as the venous pressure changes in the jugular vein, the subject of venous pressure itself has been only of academic interest to the greater number of clinicians. Its applicability in every day practice has not been given a fair trial. This evening I shall attempt to emphasize the importance of venous pressure readings in diagnostic medicine.

The growing interest in venous blood pressure arises from the new conception of its relation to cardiac activity, and an appreciation of the clinical significance of such a relationship. As a brief resume for clarity, the general principles involved in the circulation of the blood are repeated here as follows:

1. On cardiac systole the pressure of the blood in the arterial bed is elevated.

2. The degree of this elevation is determined by the energy of cardiac contraction, the volume and quality of the blood expelled and the peripheral resistance.

3. The systolic elevation of blood pressure is most felt in the aorta and decreases as the periphery is approached.

4. The elasticity of the arterial wall serves not only to accommodate for the increased blood volume of systole, but also through the inherent property of recoil to maintain a certain head of pressure during the resting period of the heart.

5. The fall of the pressure in the vascular bed is greatest in the arterioles, capillaries, and venuls, giving rise to the loose term of peripheral resistance as an explanation of this phenomenon.

6. The marked widening of the capillary bed accounts for the dispersion of the arterial pressure in a considerable measure, hence the blood is delivered to the vein under a low pressure.

7. The pumping action of muscular contraction effectively raises the pressure of blood in the veins.

8. The movement of the blood back to the heart is further favored by the increased negative pressure in the pleural cavity on inspiration.

9. The intra-thoracic venous pressure is slightly negative by reason of the influence of the inspiratory act on the flow of blood in the vena cava.

10. A minor share in this direction results from the traction upon the auricular wall by the descent of the ventricular base.

11. The tone of the vein is under the control of the veno motor nerves and the carbon dioxide content of the blood likewise exerts a direct influence on their walls.

Starling states that the energy of the cardiac contraction is determined by the initial load. In the heart the initial load or the degree of diastolic filling is measured by the venous pressure. Within certain limits, the greater the initial load, the more active will be the cardiac contraction. It is very doubtful whether this limit of myocardial reserve is ever exceeded in the normal individual, but the range of physiological response in myocardial disease will be decidedly narrowed.

From a clinical standpoint, therefore, venous pressure determination comes to occupy an unusual place in establishing the myocardial integrity. It is possible by such studies to establish directly the circulatory load on the right heart, and its ability to respond to same. A failing right heart will reflect its inefficiency in a rising venous pressure in the systemic veins. At present no clinical method is available to determine the pressure in the pulmonary veins. As a rule, the right heart ultimately bears the load for the left sided lesion. This usually occurs in all mitral lesions and in aortic lesions after the mitral valve becomes relatively incompetent. Therefore, indirectly, venous pressure readings in the systemic veins may reflect the condition of the left heart.

Now let us turn to the methods employed in the determination of venous pressure. There are two methods, the direct and the indirect methods. The results in both instances are comparable. In the direct method, determinations are made by introduction of a needle into the veins. In the indirect method the principle is the

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occlusion of the vein by external pressure. The indirect technic will be discussed first. The principle—the exertion of sufficient pressure to collapse the vein. In effect, the vein represents a manometric tube connected with the right auricle and collapse of the vein occurs at the level where the negative hydrostatic pressure equals the positive venous pressure. The apparatus used today is the modified Hooker-Eyster instrument. The essential features are: (1) a manometer calibrated in centimeters; (2) a specially constructed metallic capsule with a glass cover. This metallic capsule has opposing concave edges. A piece of rubber dam is drawn tightly over same. A small hole is cut in the rubber dam through which the vein under study may be observed. Water is the fluid medium used in the manometer. By means of a "Y" or "T" connection and a rubber tubing, a rubber bulb is connected to the manometer and to the capsule. Glycerine is used to seal the capsule to the skin over the vein under observation. A pressure on the rubber bulb elevates the pressure in the capsule and at the same time modifies the height of the column of water in the manometer.

The following standards are employed: (1) The patient is placed in a recumbent position. (2) Veins to be examined on the back of the wrist or right forearm must be on a level with the right auricle. The mid axillary line is used in recumbency. (3) The veins should be of moderate size. (4) The collapse of the vein is usually quite definite. Too protracted local pressure should not be applied as this may result in stasis. Difficulty in readings may be encountered in edema of extremities, unusual obesities, very small accessible veins, or phlebo-sclerosis. In these cases there is the direct method of venous pressure readings. In hundreds of determinations, no instance of venous pressure exceeding eleven centimeters of water has been found in the recumbent normal individual. The average in the normal recumbent is four to six centimeters of water.

Some of the factors which influence venous pressure are:

1. An increase in carbon dioxide in respired air, increases the venous pressure.

2. The hydrostatic effect of position is more felt in the veins than in any other portion of the vascular system. The venous pressure must be elevated in dependent parts sufficiently to overcome this factor.

3. There are lower readings of venous pressure in normal women than in normal men.

4. Venous pressure rises during the day and falls with rest in bed.

5. The readings are higher in the upright position.

6. The size or prominence of the peripheral vein has no bearing on the pressure.

7. The level of the venous pressure is entirely independent of the arterial blood pressure.

Now with this brief resume of venous pressure in the normal subject, let us look upon its application in the presence of clinical pathology. The limit of the ability of the myocardium to respond to increased initial load (venous pressure) by increased activity is distinctly narrowed by diseases affecting the heart muscle. The result of exceeding the ability of the myocardium to so respond is readily foreseen. As in the case of an overloaded voluntary muscle, the heart contracts likewise more and more ineffectively. Blood remains in the heart chambers after systole and tends to dam back in the large venous trunks. The venous pressure mounts further and the vicious cycle is complete. Ultimately the picture of congestive heart failure supervenes. The initial level of venous pressure as established by Clark in 1915, relative to cardiac decompensation, is equivalent to twenty centimeters of water. This standard has withstood clinical scrutiny. A venous pressure above twenty centimeters is indicative of a very poor immediate prognosis. Compensation is restricted in such a case. When the peripheral demand for increased blood supply has dropped to an irreducible minimum and the myocardium has from whatever cause begun to contract more and more effectively. Clearly in such a case the first indication is to bring about as complete muscular quiet as possible to reduce the demand of heart activity on one hand, and to decrease the return flow of blood to the heart on the other hand. Diet and digitalis are sheet anchors in this circumstance, but the most neglected procedure is venesection. The removal of 500 c.c. of blood in such a case is often the life-saving step, and venous pressure determinations constitute not only the guide

to this necessity, but also a valuable indication as to its efficiency. The venous pressure will invariably fall from its high level above twenty centimeters of water to between twelve and fifteen centimeters on venesection of 500 c.c. on individuals suffering from cardiac decompensation. If there be a myocardial reserve to respond to the lessened load, by more complete contractions this lowered venous pressure will be maintained or fall to a still lower level. If the ability of the heart to so respond no longer exists then the venous pressure will, after the early fall, steadily mount to or above its previous high level. No repetition of the blood letting in an unfavorably reacting case will affect a good response; but should a case previously reacting well to venesection again show signs of heart failure, the procedure may be repeated with favorable results. As compensation is regained either spontaneously or under treatment, the venous pressure falls. Importantly, the well compensated cardiac case shows no elevated venous pressure.

Venous pressure readings in the administration of anesthetics plays a very important part. In the first stage of anesthesia there is an increase in venous pressure. There is a still further rise in the second stage. Obviously the high levels of venous pressures of 26 to 34 c.m. of water induced by the circumstances of general anesthesia, evidence serious load on the right heart. These results may explain certain cases of cardiac failure under anesthesia. A valuable aid is routine venous pressure determinations in cases requiring general anesthesias.

Conclusions: In closing may I repeat the following pertinent points. (1) Venous pressure determinations reflect the right heart load. (2) Venous hypertension means myocardial failure. (3) A critical level reading of 20 c.m. of water is a guide to venesection to combat right heart failure. (4) Venous pressure readings are of value in the administration of general anesthetics. (5) Venous pressure is lower in females than in males. (6) There is a rise during waking hours and a lowering during sleep. (7) It is influenced by posture. (8) The normal average V.P. pressure is 4 to 6 c.m.

SARCOMA OF THE ORBIT*

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Senn says, "A tumor is a localized increase of tissue, the product of tissue proliferation of embryonic cells, of congenital or post-natal origin, produced independently of microbic causes."

Since congenital anomalies, inflammation, injuries and tumors may be found in the orbit and although the incidence of malignant tumors of the orbit is small, nevertheless, we do find them. I will not take up in this paper inflammatory or cystic tumors, but will confine it entirely to sarcomas. Malignant tumors grow rapidly. Infiltrate other tissues, are unlimited in their boundaries and are practically always immoble. Malignant tumors produce metastasis which indicates infection and tend to recur, even after removal. We also find in the case of malignancy, involvement of the lymph glands, at first those draining the part involved, later the entire glandular system is involved.

There are several varieties of sarcoma of the orbit. These are fibro, myxo, cysto, osteo, cylindroma, and melano sarcoma.

Sarcoma of the orbit is certain death for the individual except in very rare instances. It is the most malignant of all tumors of the orbit. The individual embryonal cells may be round or spindle shaped. Statistics show that the incidence of sarcoma of the orbit has been estimated from one in ten thousand to one in fifteen thousand cases, although the majority of writers claim that one in ten thousand would come nearer being correct. The young individual is pre-disposed to sarcoma of the orbit. Sex plays no part, neither does the question of trauma, although, in one case of melano sarcoma of the orbit I operated in 1916, there was a definite history of trauma. In this case of sarcoma just mentioned the tumor mass was attached to the posterior bony wall and was independent of the globe. After sixteen years this youngster has had no recurrence and there has been no interference at any time with his vision.

In the case of sarcoma of the orbit it is thought that the majority of them arise from the orbital fat, although, the capsule and supraorbital connective tissue may be

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the starting point of the sarcoma. Too, a sarcoma may arise with the choroid or the sclera and involve the orbit.

While it is claimed by authorities that youth pre-disposes to sarcoma of the orbit you will probably remember that at the meeting of this Society in Atoka, on December 12, 1928, I reported a case of lymphosarcoma which report was published in the Oklahoma State Medical Association Journal of January, 1929. This case was a man 64 years of age. Although in this case the primary seat of his sarcoma was not located it is as good a guess to say that it originated in the orbit as to locate its origin in any other part of the body. In the case of this old man the orbital contents on the right side was protruding from the cavity and was about the size of a tennis ball, the left slightly smaller. At the time I saw him general sarcomatosis was present as manifested by generalized lymphatic gland involvement, although his trouble apparently started only about eighteen months before he came to me. This man died in about four months after I first saw him.

Examination: It is not hard to diagnose a tumor of the orbit or its location, but only the microscope will determine the type of tumor found.

Treatment: The treatment of tumor of the orbit depends upon the type of tumor found. In the case of sarcoma there is the operative followed by radium or X-ray or both radium and X-ray alone.

In the case of the child I am reporting in this paper, its life might possibly have been prolonged a short while had I done a complete exenteration of the orbit at the time of the operation and had it had X-rayed afterwards. It did not receive X-ray due to reasons over which I had no control whatsoever. I do not think (and this is shared by many good men) that X-ray would have done anything more than have prolonged the life of the child. It most assuredly would not have cured it.

CASE REPORT

B. L. F. Female. Age 2. I first saw this child January 22, 1932. Family history: Father 53, good health; mother 34, good health. No brothers and no sisters. The mother gives the following history: She is the mother of five children. The two oldest children, two boys, are 19 and 17 years of age, by the first husband; then twins, both girls, nine years of age, by the second husband; and baby two years of age, by third husband. The two oldest children, the boys, have had no trouble with their eyes at all. One of the twins has had no trouble; the other twin has a congenital cataract of the left eye. The baby has a condition of the right eye wherein the lens seems to be absent, but the pupil is enlarged and there is a dense yellowish white membrane deep in the eye, which may or may not be the capsule of the lens. The eye of the baby is very, very hard, and waters almost continuously . She keeps the eye more or less closed and the last few days has been complaining of light hurting. There is no maternal family history of defective eyes. The family history of the two fathers, second and third, is negative for any complaints of any kind. History of one miscarriage, between the two boys, at about four months. No other history of miscarriage or abortion.

Upon examination of this child's eye on January 22, I found the eye was extremely red and very hard. It was extremely difficult to examine the child, but it was apparent that there was a generalized inflammation and the mother was told to bring the child to the hospital. On January 23, the child was examined in the hospital, at which time it was seen when the eye was turned upward and the lower lid pulled down that a mass came up from beneath the eye. This mass was apparently the size of a Concord grape. Under general anesthetic the examination of the eye showed apparently no lens, and the first membrane or tissue seen in the pupil of the eye is apparently very, very deep, and is of a greenish cast. The tumor mass is inferior to the globe, the globe being larger than normal and extremely hard. The eye was enucleated with difficulty because of the adhesions and the tumor mass. The eye was enucleated under ether, the time required being thirty minutes.

Operative Record: Gross findings: There is attached to the inferior and posterior border of the globe a tumor mass about one and one-fourth inches long by seven-eighths inch wide and one-half inch thick. This mass is attached in its entirety to the globe. When the globe was lifted from the orbital cavity the entire orbital contents extruded between the lids and it was with difficulty that the contents were replaced in the orbital cavity. A pressure dressing was applied.

Pathological Report: Lattimore Labora-

tories. January 27, 1932. Clinical diagnosis: Grossly this specimen consists of an eye, showing a tumor, about 15 mm. in diameter, just posterior to the eye ball, yet attached. Sections from this specimen presents some very atypical changes. The cells for the most part are a fairly uniform round cell, presenting nuclei of varying sizes, hyperchromatic in staining, the picture of a lympho-sarcoma. Yet in other places we find giant cells, which I have never found in a lympho-sarcoma. The blood supply is increased. I feel sure this is a malignant condition, one likely of embryonal origin and one of connective. The exact classification is very difficult, that is, the subdivision beyond it being a sarcoma. In my opinion, however, it falls in the classification of a round cell sarcoma.

Microscopical Diagnosis: Round cell sarcoma. Signed, J. L. Lattimore, M.D., Pathologist. Examination of the urine was negative.

Progress Notes: January 25—Dressing changed. Very little trauma. Some protrusion of orbital contents. Baby in good condition.

January 26 — Dressing changed. Apparently no infection. Eye clean and only small amount of orbital tissue protruding between the lids. The patient is allowed to go home to come to my office for dressings.

January 27 — Follow-up: Dressing changed. Small amount of orbital contents still protruding between the lids. There is a small amount of hemorrhagic exudate under the skin below the lower lid and toward the nose.

January 30—No change over condition as of the 27th, except that the evidence of trauma has disappeared.

February 2—The contents of the orbit have receded and do not now protrude between the lids. The patient does not complain of any pain and seems to be getting along well.

February 4—Patient continues to improve. The wound has apparently healed and there has not been at any time any discharge. There are no enlarged cervial glands.

March 24—There is present two enlarged lymph glands, one located about two and one-half inches above and slightly posterior to right orbital cavity, it being about one inch long by five-eights inch wide. The other gland is in the posterior scalp about two inches to the left of the inion and is about the same size as that over the frontal bone. There has never been any temperature.

I did not again see this child, but was told by neighbors and the physician treating it that it got progressively worse and that toward the last it was necessary to keep it under deodorized tincture of opium, 8 to 10 drops repeated often, for its pain.

The lymph glands all over its body became involved until at its death the neck was swollen as large as its head.

For about a month before its death it was able to take liquids only, and that with difficulty, and at its death its oral cavity was reduced to nothing more than a narrow tube.

The frontal bone and superior maxilla, from the accounts I get, were destroyed. The left eye was bulging from the orbital cavity and the child was blind for quite awhile before its death.

There is one peculiar thing about the deaths from sarcoma of the orbit, they all retain their mental faculties to the end, showing the brain is not invaded or involved by the sarcoma.

The child died the 8th of May, 1932, about three and a half months after operation.

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SELECTIVE COLLAPSE OF LUNG WITH PHRENICOTOMY COMPARABLE TO THAT WITH PNEUMOTHORAX

C. M. Van Allen, Peiping, China (Journal A. A. M., July 2, 1932), calls attention to the fact that when a few hundred cubic centimeters of air is injected into the pleural space of persons with tuberculosis of one lung lobe, the slack given by the air to the elastic pull of the hemilung is frequently taken up more by the diseased than by the normal lobes, with the result that the air resides principally over the diseased lobe and collapses it selectively. He refers to the occurrence of selective collapse of the lung in pulmonary tuberculosis after phrenicotomy and compares it in principle to selective collapse after pneumothorax. For both operations, differentiation is made between the deflation of the diseased tissues which occurs immediately and is probably due to increased elastic tone of the lung, and that which occurs gradually and is due to formation and contraction of scar tissue. The author believes that the increased elastic tension of the lung, in the first type, is due largely to thickening of the pulmonary septums and membranes from vascular congestion and interstitial deposit of inflammatory fluids and cells.

ARE ALL PULPLESS TEETH A MENACE TO THE HEALTH OF THE PATIENT?

S. G. WEISS, D.D.S.
MUSKOGEE

Some time ago, I had the privilege and pleasure of attending a most interesting and educational meeting of the Muskogee County Medical Society. At this meeting I listened to a splendid paper, rendered by one of my colleagues, on the subject of the "Pulpless Tooth," and it brought forth such enthusiastic response, and I would say, almost a unanimous condemnation of the pulpless tooth, by the physicians present, that I decided to carry on with this subject. My decision became final when I saw so many hands raised in answer to your Secretary's question, "How many of you doctors here have dead teeth in your mouths?"

However, gentlemen, I want to give you a different phaze of the pulpless tooth; I want to attempt to defend what I would call the well-cared-for and importantly located pulpless tooth, the pulpless tooth that is so often inaccurately called the dead tooth, the pulpless tooth that due to circumstantial evidence and inadequate diagnosis is placed into the general classification of all pulpless teeth and indiscriminately sacrificed by extraction. Dentistry, like medicine, is not an exact science; there are no set rules and regulations that will govern the workings of nature, man's worst enemy at times, and then at other times his best friend. I hope I am successful in making it clear to you, and I say this in all sincerity and freedom from pretense, that there is a happy medium between the two opposing groups: the one that believes the removal of all pulpless teeth a cure-all for every type of ailment, and the other that can see no possible benefit derived from its consideration, from a deeper study of the subject, from an attempt to place into practice the broader developments that have been disclosed; all toward a more rational solution. I ask the question, "Are all pulpless teeth a menace to the health of the patient?" A most arbitrary subject and one known as the dilemma of dentistry.

It is true that for twenty years or more, much attention has been centered on dental infection, much literature has been written, and much discussion has taken place; and still the pulpless tooth remains in a most unsatisfactory condition, almost an unsolved problem, and so often, I would say regardless of its innocence, the victim of suggestive and auto-suggestive influences. This unsatisfactory condition, gentlemen, is not due to a lack of effort, ability or accomplishments on the part of many and many conscientious and skillful investigators. But it is more due to a lack of will and desire on the part of the big majority in the profession, who because a universal technic and procedure has not as yet been perfected, hesitate to work out a procedure of their own, and assume the easiest method out for affording relief; this unsatisfactory condition is also due to a lack of will and desire on the part of this big majority to study, to study the broader developments disclosed by these conscientious and skillful investigators and to fortify themselves with the results of these investigations, so that the physician in the case may have an opportunity to know the why and the wherefore of a more rational diagnosis; this unsatisfactory condition is also due to a lack of will and desire an the part of the physician to become more dental-minded and on the part of the dentist to become more medical-minded, a necessary procedure recognized in all our leading schools today, for the pulpless tooth is one difficult and important problem in dentistry that must take into consideration biologic principles.

These investigators, both physicians and dentists, men pre-eminent in the field of research on the pulpless tooth and root-canal therapy, have found, from the histo logical point of view, that a filled and treated tooth is not necessarily an infected tooth, not even a dead tooth; that though the pulp is gone, this tooth is embedded in a highly vascular fibrous membrane, and that treatment and filling of the pulp canal can be accomplished even after infection has occurred. The results of their intensive research has proven that all pulpless teeth are not pathogenic, and that the policy of indiscriminate extraction of all teeth in which the pulps are involved is an irrational procedure, does not meet with medical and dental requirements, and much less the requirements of the patient. These results have also proven, that if dental infection is to be eliminated completely by extraction, then there is, at present, no limit as to where extractions would end other than in the elimination of all carious

and traumatized teeth which may have vital pulp degeneration, infective degeneration of the pulp.

Gentlemen, don't understand me as suggesting that all pulpless teeth can be saved by any method, however efficient; for that mythical one hundred percent is not reached in our field any more than in the medical field. But I do believe that it is at present within the ability of many operators to save a large majority of pulpless teeth, particularly in important positions in the mouth, through the principles of asepsis to surgical procedures, as demonstrated by the success of these procedures in the medical profession. These procedures involve physical factors, biology and the knowledge of immunology, and depend so much on the right sort of cooperation between the dentist and the physician.

The mouth and teeth, because of their position are easily examined, yet the determination of the nature and extent of oral infection is really a highly technical problem. It is true that any one can acquire much information from the study of dental radiographs, but to presume to arrive at a definite conclusion solely from their examination, and not in conjunction with the clinical history and symptoms of the case, is a type of folly that no good physician would be guilty of in the study of any part of the body. Interpretation of the radiographs is highly technical in itself and requires study, experience and good judgment for accuracy, as there are many confusing images and variations, the significance of which must be determined before rendering an opinion. Intelligently interpreting the radiographs means to be able to differentiate atrophy and trauma from disease; residual infection and infection around erupting third molars; medullary spaces from periapical disease; root resorption of vital teeth; peri-cementitis from periodontitis; pulp stones; significance of sclerotic bone and hypercementosis; the reaction of destructive drugs about the apex and the reaction caused by over-filling with guttapercha; and so on. Gentlemen, it is the dentist's field, but should the radical procedure be advised, without case-history, just due to suggestive influences; don't we know, as dentists, that the substitutes for the individuals own teeth may do as great a harm and produce infection which did not previously exist? Haven't we seen deep pyorrhea pockets created through irritation produced by partial dentures, haven't we seen the growth of virulent bacteria beneath artificial dentures and fixed bridges worn by careless patients? A woman-patient of mine kept a one-tooth removable appliance in her mouth for one year without removing it, and when I removed it, the clasped-teeth were denuded of enamel at contact and the appliance was literally covered with tartar, not to say anything of the highly inflamed condition of the tissues. Is then the physician alone capable of deciding which is the greater risk?

As is the aim of modern medicine, so should be the aim of modern dentistry. Not to mutilate, but to preserve; and this cannot be accomplished through irrational and radical methods, but requires more effort and more attention to the patient's physical condition. To attain this most satisfactory result, the physician and dentist must be reciprocally helpful in arriving at a proper diagnosis. I have seen, and no doubt have you, many disappointments follow the rapid, extensive and radical sacrificing of teeth, where the principal objective was the clearing up of some systemic disorder. Our procedure should not be the result of suggestive influences.

The most important area of the pulpless tooth, the seat of the whole trouble, is that at the apex, and infection is the most serious accident that may occur to this periapical region. However such infections are secondary to these primary causes: pulp canal infections resulting from caries; from dental operations because of a break in the technic of asepsis; to extension from adjacent structures as the peridental membrane or a nearby infected apex; and to infection from more remote parts by way of the blood stream or lymph channels, which is more common than is usually believed. The great problem has been to sterilize and seal the opening of this apex in a manner acceptable to nature; and Dr. Howard Temple Stewart, New York, a skillful research worker, has, with a clean record of more than three-hundred cases extending over a period of four years and with most pleasing clinical results, proven this can be done. His method, purely surgical-proper drainage and cleansing of canal pulp contents, a drainage, as surgeons require for weeks instead of days, means the infection would not have been taken off by the surrounding tissue. Just as in

a compound fracture of the tibia, for instance, with resultant inflammation and suppuration, even with proper treatment, there will be no physiologic ossified callus expected to be formed until the necrotic tissue has been digested or thrown off. In treating dental infections there is more or less involvement of osseous tissue, and the necessity for, and extent of surgical interference here, is dependent upon the degree of destruction of the affected parts, the virulence of the invading organisms, the duration of the infectious process, and the resistance of the patient. And after all has been said and done, does not the physician await graciously, the efforts of nature to "fill in" and do her work, dependent upon the immunizing forces of the patient.

What the dentist does not consider, and of which there is little doubt, is that the same general rules obtain in the matter of healing of infectious conditions about the teeth and jaws that apply in other parts of the body. The teeth are of connective tissue origin, and their development and versatile manner of regeneration and repair, excluding the enamel, is characteristic of this widely distributed tissue of the human body; its possibilities of regeneration and repair are practically unlimited. And to supplement this advantage, we have as we all know, that most powerful antiseptic at our disposal, that antiseptic upon which, consciously and unconsciously, we are almost entirely dependent for overcoming every infection, that is, the activity of the living tissue cells.

We know that the presence of bacteria anywhere in the body does not necessarily indicate infection; there must be a reaction between the tissue cells and the bacteria before we have infection. Microbes are often present in organisms that manifest no morbid symptoms, and we know that all mouths are notoriously carriers of many kinds of microbes, some of them pathogenic. All of us in the practice of dentistry have seen free exudation of pus in the mouths of many persons who present no symptoms of systemic disturbances or even local discomfort.

F. W. Wilkinson, of the University of Melbourne, in a resume of the pulpless tooth, says: It is well to realize that nature does not demand absolute sterility and it has been shown that deep healthy tissue is not always sterile. We know that nonabsorbable sutures have been used by surgeons, bullets are not always removed unless they produce symptoms, and various other substances are used in plastic work. In all such instances the foreign substance is separated from the more delicate cells by a permanent wall of connective tissue so that the foreign body is thereby completely encapsulated. This is also the outcome of a successful root-canal treatment and filling. The tip of the filling is enclosed by a cap of fibrous tissue, the borders of which become attached to the wall of the root-canal; the readiness with which this is accomplished depends not only upon the absence of infection but also upon the degree of the technical success attained in inserting the filling. Multi-rooted teeth do not complicate the operation, as the fibrous band of connective tissue is formed at the exit of the branch opening from the main canal; a fact proven by Dr. Edward H. Hatton, of Chicago, a skilled physician worker in the pulpless tooth research field.

Dr. Hatton, using microscopic anatomic methods, has demonstrated that many teeth that have been treated and filled are without histologic evidence of infection; and both steps in the progressive involvement of the periapical tissues in infection, and those in the healing of this region after treatment and filling of the pulp canal, were shown. Three methods of approach have been used by groups of workers in this country and abroad; bacteriologic, radiographic and histologic, which have given evidence of apical regeneration after root canal treatment has been built up. Grove, a pioneer in this work, saw two changes at the tooth apex following root canal treatment: one, a tendency for the apical peridental membrane to invaginate itself into such parts of the apical pulp canal as were not occupied by the filling material; the other, a tendency of the soft tissues to deposit new layers of cementum-like substance on the tooth apex, both inside and outside of the canal, but particularly inside of the canal. This last phenomenon, gentlemen, was shown to me in a case I had, by Dr. Clarence Simpson, of St. Louis. The radiograph was negative, but the tooth was extracted due to autosuggestive influences; and when the root was filed into, this new layer of cementum with a complete obliteration of the canal at the apex, was quite visible. Dr Simpson, Professor of radiology at Washington University,

and a national authority, tells me to quote him as follows: "The hallucinations regarding pulpless teeth have resulted in sins of commission in condemning harmless pulpless teeth and in sins of omission in ignoring diseased vital teeth." "If the foramina of some pulpless teeth are sealed by cementum, if some pulpless teeth have been kept aseptic and if some pulpless teeth are not sufficiently virulent to produce disease, then all pulpless teeth are not pathogenic.

Dr. Ewing P. Brady, professor of dental pathology at Washington University, and an authority on root-canal therapy, in answer to my request for his opinion, wrote me: "We know that all pulpless teeth are not pathogenic, the point under discussion now is whether the drugs used after mechanical injury produced by the surgical removal of the pulp, are not accountable for some of the rarefaction that we find about the root end, and quite often diagnosed from the radiograph as infection." Interesting work, along this line, is being done in England, today.

Dr. Clyde Davis, in a series of articles in American and foreign journals, whose method was modified pulp amputation, described, that after treatment, the pulp canal tissues in the apical portions of the roots which were not removed and which were vital, underwent a transformation and produced an osteoid tissue which was deposited on the walls to a degree that ended in the obliteration of the canals so treated. I could mention such men as Hess and Mueller of the University of Zurich; Blayney and Gottlieb, all having obtained results of regeneration in their extensive research work, and whose methods were checked by both the roentgen-rays and bacteriologic tests, and where this type of regeneration was found histologically, the bacteriologic examinations were negative, tissues were sterile, and the roentgen-ray examinations also negative.

In concluding, let me say to you that the purpose of my paper was not to give you assurance or overconfidence as to your procedure. You all know that the radical of today may become the conservative of to-morrow, and I merely place these facts before you, in the hope that it may change your attitude toward the properly cared for pulpless tooth, that it may be a means toward obtaining reciprocal co-operation, and that all will result in a diagnosis for the benefit of the patient, with that high aim in mind, not to mutilate, but to preserve.

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CONTRACT PRACTICE

R. G. Leland, Chicago (Journal A. M. A., March 5, 1932), believes that although there are many details of contract practice which deserve much more detailed description and comment than is possible in his report, it may be stated that contract practice (1) took its origin largely from necessity; (2) has been legalized, in certain places, by state statute; (3) under certain conditions and in some forms is both ethical and legitimate; (4) in general, has become highly commercialized and competitive; (5) is largely limited to the pay roll class; (6) does not, in most cases, extend its provisions to women and children; (7) concerns itself, almost without exception, to curative medicine and does not include preventive measures; (8) shows no interest in public or individual welfare; (9) furnishes medical care which is often inferior in character; (10) in many instances is characterized by underbidding, subletting, misrepresentation and racketeering; (11) is economically unsound in many of its present forms; (12) is essentially sickness insurance usually not supervised or regulated; (13) is often used by the operators thereof to influence legislation in favor of extension of the plan; (14) in many of its present forms lowers the confidences of both the individual and the public in the medical profession; (15) has some features that deserve refinement and extension and others that are unethical and dangerous and should be abolished.

IOPAX: AN ANALYSIS OF RESULTS OBTAINED IN FORTY-FIVE CASES, WITH REPORT OF CASES SHOWING SEVERE REACTION FOLLOWING INJECTION OF IOPAX

James J. Joelson and Robert Zollinger, Cleveland (Journal A. M. A., March 5, 1932), made an analysis of the results obtained with iopax in forty-five cases. Diagnostic pyelograms were obtained in only 51 per cent of the cases, and completely satisfactory pyelograms in about 40 per cent of the cases. The best results were obtained in pyelitis of childhood, urinary lithiasis, congenital anomalies of the kidneys, and nephroptosis. Iopax was not satisfactory in the authors' cases of renal tuberculosis. One of the main deficiencies of the method was that the minor calices were frequently not visualized at all or were incompletely visualized. The drug may not be entirely nontoxic, as evidenced by frequent mild reactions and one severe reaction. The method is expensive, and this becomes a valid objection to its routine use when one considers the frequency with which unsatisfactory results occur.

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EDITORIAL

THE COFFEE-HUMBER TREATMENT OF CANCER

Several years ago Doctors Coffee and Humber of the Southern Pacific Railroad, San Francisco, announced that they had what they believed to be a remarkable system of treatment of cancer. As the writer now recalls, the treatment was made up from a dilution secured from the adrenal glands. It was said that this dilution had a remarkable effect in many instances in making a growth almost miraculously disappear, or at least reduce it in size, and that it was especially effective in reducing or causing to wholly disappear the terrible pain sometimes accompanying this disease. Sometime after that, at the Detroit meeting, the writer discussed the matter with Dr. James F. Percy, of Los Angeles, who, at that time, had carefully studied the case histories, reports, treatment given, and the end results up to that time of the cases so treated. He had investigated more than 500 cases. Recently at the Oklahoma City meeting the writer again had the pleasure of talking to Dr. Percy about the matter, and now he is able to make a statement based upon the sudy of more than 2000 cases. He is very positive that neither Coffee or Humber claim, or ever have claimed to have a "cure" for cancer. That the matter was then and has always since been in the experimental stage.

Dr. Percy states that he has seen practically no "cures" from the use of the dilution but has seen remarkable results obtained in the disappearance or almost disappearance of the growth and he especially notes the remarkable effect it has had on the reduction or entire disappearance of pain.

Of course we all understand that in this we have no cure for cancer, but it must not be gainsaid that probably in this composition we do have a measure which, as above stated, does practically destroy the growth for a time, relieve the pain more or less and therefore it should probably be classed as a great aid in relieving these sufferers from one of the most dreaded diseases with which the practitioner has to deal.

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THE LAST LEGISLATURE—WHAT IT DID NOT DO

The last Legislature is to be congratulated on its very good common sense in taking the sensible and modern view of the various measures presented before it. Among its acts were these:

The prohibition or sale of marijuana, veronal, barbital, luminal, chloral hydrate, bromidia or somnos except on the prescription of a licensed practitioner of medicine, osteopathy, dentistry or veterinary medicine, which prevention would be almost the eqivalent of requiring the purchaser to secure a prescription before buying a sack of common table salt or cooking soda.

We question the practicability of this law. It will at once place the drugs in the "bootleg" class, it will not prohibit the sale of a single tablet—on the contrary it

will force many poor people to go to a physician for a prescription in those cases where it is necessary for the relief of distress in long drawn out chronic, or incurable diseases. We believe the sale of these drugs should have been left just as they were. Now they will procure the drug as the addict procures his whiskey or narcotics, and in the end the law will do no good.

It refused to pass a legislative act permitting a poor, ignorant woman, far out in the western hills of the State, to follow her occupation of "curing" cancer, by the application of certain compounds she alleged would cure the disease. In this case too, we all know she has no cure for cancer but probably has a mixture that is a hundred years or more old.

It is left in the hands of the Governor as to whether the Post-Graduate Medical Extension work should be continued. Of course every physician in the State who studies these matters knows that this work is good not only for the physician but for the people at large, and should be continued. Its continuation, however, depends upon the amount of cash on or in sight, for, there are many other measures clamoring for continuation of appropriations, which lumped together amount to a considerable sum, which must come from the pockets of the taxpayers of the State. We hope however that the Extension work will be continued, for its cost is a relatively very small sum of money and it undoubtedly does a great deal of good.

It abolished the Union Soldiers' Home and this we agree to, for the Federal Government has ample provisions in various parts of the United States to care for these old men and it would seem a mere duplication of expense for the State of Oklahoma to continue to spend money upon these cases, when the National Government already has ample buildings, grounds, and hospitals for their care.

It refused to pass an act reducing the amount which a doctor might collect for a call to 25 cents per mile. It may be very sensibly seen that any physician would promptly refuse to make a call upon any such basis. The same physician, however, will make charity calls or tend the needs of the sick for *nothing*, if it is necessary, but to fix the amount at 25 cents per mile which one might charge for calling upon a well-to-do person, is pure folly. In the end the act would probably have been held unconstitutional by the State Supreme Court.

We congratulate the Legislature on this action.

It refused to pass an act permitting Osteopaths to enter a State and County owned hospital upon the same grounds as a finely qualified physician is permitted to enter them.

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THE WOES TO WHICH THE DOCTOR IS EXPOSED

Ordinarily, what is known as the Statute of Limitations runs one year in ordinary cases, but occasionally extraordinary cases occur and we have now one such case on hand. Thinking it over it seems that it is unjust to be called upon to defend a suit many, many, years old, where the witnesses to what occurred may have died, or moved away. However, that does not prevent the bringing of a certain type of suit.

In this particular instance the plaintiff, one Henderson, sustained a fracture twelve years ago; a physician was called and this physician apparently rendered the best service possible, taking into consideration the type of fracture of the forearm which occurred. Unfortunately the patient happened to be only six years of age at the time. Now upon reaching legal age he has filed suit against the physician alleging malpractice. The chances are very strong that he will obtain nothing for the physician called in every available, competent man in reach to assist him in treatment and advice as to the case.

Of course it is a very well known rule of law, that a minor may bring suit for an occurrence which occurred many years prior to the affair, within one year after attaining his majority. But it certainly seems to us very unjust that a physician may be called to answer such a suit.

As we have pointed out before, keep a record of everything—what was found, and everything that was done to combat it, all of which may prove invaluable in later years. On this account we urge every physician practicing medicine to keep a card (we keep one 5"x8", and to that is often clipped other pages so that should any question arise in the future we have all the data at hand).

This is a very positive protection and

aid to us at all times. I simply pick up the card, read over the record, and know at once what happened at that time and what was done about it. We recommend this system to every physician.

In this connection it occurs to the writer that the physician should always retain the X-ray or a duplicate of it, for no one knows what disposition may be made of it, should it fall into the wrong hands.

QUININE IN THE KATANGA REGION

It has for many years been generally supposed that quinine used in sufficient quantities, first in a therapeutic form and later as a tonic agent, would clear up practically any case of malarial infection. It will be recalled that the great authority, General Wm. C. Gorgas, made a trip to the western coast of Africa for the specific purpose of advising certain great mine owners how to eradicate malarial infection, which was so virulent in form that it was practically impossible to operate the mines on account of the existance of a malignant form of malarial infection.

This refers, however, to the Katanga copper mines, (page 1555, Journal of the American Medical Association, May 13, 1933), and the apparent failure of our old standby, quinine, to control malaria. The findings, briefly, are as follows: "Addressing the Cercle medical of Katanga, Mr. Staudt coordinated and summarized the reports rendered by the physicians of Katanga on the prophylactic use of quinine at various points in the province during the last rainy season (1931-1932). His conclusions correspond closely to those of Dr. Van Nitsen, as set forth in his article: 1. Quinine administered in prophylactic doses to native malarial children, who continue to live in a region in which malaria is widely prevalent, is incapable of preventing reinfections or of effecting a cure. 2. Quinine does, however, increase the resistance of the organism toward malarial infection, which is evidenced by a reduction in the general morbidity and in the mortality. 3. Quinine treatment should begin with a curative course and should be continued. 4. The best results were secured with adequate daily doses. 5. The general prophylactic use of quinine is burdensome and requires careful supervision. 6. The prophylactic use of quinine will not in itself solve the malaria problem."

This seems worthy of mention in our pages for the reason that certain sections of Oklahoma are subject to virulent forms of malarial infection and the infection prevails from year to year, so it seems warranted to note every means which might prove of use to the physician in the control of this ordinarily believed to be infection, which however, on occasion might prove very aggravating as to control.

Editorial Notes—Personal and General

DR. W. J. RISEN, Hooker, was injured while driving from Oklahoma City, receiving a fracture of the left wrist.

DR. W. J. WALLACE, Oklahoma City, attended the meeting of the American Medical Association, Milwaukee, also the American Urological meeting, Chicago, in June.

MUSKOGEE COUNTY MEDICAL SOCIETY were the guests of the Muskogee County Dental Society, June 13th, at the Fite Clinic, and viewed the motion picture dealing with Research in Nutrition and Dental Health.

DR. AND MRS. W. ALBERT COOK, Tulsa, visited in Chicago in June. Dr. Cook also attended the Milwaukee meeting of the American Medical Association, as delegate of the Oklahoma State Medical Association.

DR. J. M. BYRUM, Shawnee, for many years Secretary of the State Board of Medical Examiners, has been reappointed for a term of four years. The many friends of Dr. Byrum will congratulate him upon his reappointment.

CANADIAN COUNTY MEDICAL SOCIETY held their regular quarterly meeting June 4th, as the guests of Dr. and Mrs. Joseph T. Phelps, El Reno. A dinner was served the guests, after which Dr. C. P. Bondurant, Oklahoma City, presented a lantern slide lecture on "Diseases of the Skin, Commonly Seen in General Practice." Dr. J. K. Kuhn, Oklahoma City, was the other additional guest. Dr. Erwin Walter Blatter, head of the medical staff of the Southwest Reformatory was made an honorary member of the Society.

PATRONIZE OUR ADVERTISERS

The better journals in every business, technical and professional field are so important to the life and progress of the industry or profession they serve that, even in a selfish sense, it is good business for the factors in that industry or profession through a period like the present, to patronize the advertisers in their publication exclusively, when possible. For publications cannot live on news alone; they must have advertising patronage, and have it continuously.

THE FOLLOWING MEMBERS of the State Medical Association volunteered their services for the purpose of rendering addresses and clinics in the points indicated. A resolution was passed that the men should be thanked for their services, and the Journal takes great pleasure in calling attention to their work.

DEGENERATIVE DISEASES

(Eastern)

Dr. J. T. Martin, Oklahoma City
Dr. A. W. White, Oklahoma City
Dr. Harry Wilkins, Oklahoma City
Dr. A. B. Chase, Oklahoma City
Dr. Tom Lowery, Oklahoma City
Dr. Wann Langston, Oklahoma City

(Western)

Dr. Wann Langston, Oklahoma City
Dr. C. J. Fishman, Oklahoma City
Dr. Lea Riely, Oklahoma City
Dr. G. E. Stanbro, Oklahoma City

(All from Oklahoma City)

SOUTHEASTERN OKLAHOMA CIRCUIT

Dr. J. M. Byrum, Shawnee
Dr. C. C. Fulton, Oklahoma City
Dr. J. W. Moreledge, Oklahoma City
Dr. C. V. Rice, Muskogee
Dr. M. B. Glismann, Okmulgee
Dr. J. F. Kuhn, Oklahoma City
Dr. Pat Fite, Muskogee
Dr. A. C. McFarling, Shawnee
Dr. J. A. Walker, Shawnee
Dr. T. H. McCarley, McAlester
Dr. J. B. Eskridge, Oklahoma City
Dr. Wendell Long, Oklahhoma City
Dr. J. W. Kelso, Oklahoma City
Dr. L. S. Willour, McAlester

CANCER TEACHING CLINICS

Dr. E. S. Lain, Oklahhoma City
Dr. M. M. Roland, Oklahoma City
Dr. Wm. E. Eastland, Oklahoma City
Dr. Thuringer, Oklahoma City

Also three doctors from every Society where the clinic was given; 35 in all out in these counties.

DOCTOR JOHN A. JONES

Dr. J. A. Jones, 59 years of age, of Tonkawa, Oklahoma, died April 19, 1933, in Wesley Hospital at Wichita, Kansas, following an illness of several months.

Dr. Jones was born at Valparaiso, Indiana, January 23, 1874, and moved to Tonkawa, Oklahoma, in 1900, where he has practiced medicine continuously until a few months prior to his death.

He was a member of the Kay County Medical Society, Tonkawa Lions Club, Past President of the Local Izaak Walton League, Secretary of the Board of Regents of U. J. C., and U. P. S. for the past eight years, a member of Yeoman Lodge, Odd Fellow, Eastern Star and a Thirty-third degree Mason.

He is survived by his wife and one daughter.

RUSSIANS AND LIQUOR

Russians seem to have more "drinking sense" than we, notwithstanding our idea of their benighted state. Ray Long, the American writer visiting Russia, states that even the better class of people drink Vodka all night, practically, without a drunk man in the party, this due to the fact that they take food continuously in between and along with the drink. Long says food acts as a blotter. Here in the United States we get a bottle of whiskey (the writer drinks nothing now, on account of his health, and not on account of his morals), and do not leave until the bottle is empty.

Long states that in every drinking place there are poster arguments against the use of liquor, cartoons showing a man being kicked off the job because he drank too much. It seems that the Russians realize the value of moral suasion and notwithstanding they have the most autocratic power above them, they have not gone as far as the United States in attempting to legislate temperance into the people.

Probably a medical Journal should not discuss this matter but we cannot refrain from noting the enormous loss of revenue due to the 18th Amendment and the further fact that enormous amounts of liquor are used in spite of every attempt of prohibitory law against it.

Merck & Company, on April 25th, dedicated the Merck Research Laboratory at Rahway, N. J. In commemoration of this event the Company has issued a remarkably handsome book, 8¾x12 inches, containing seventeen pages of printed material, and twelve full page cuts, the latter showing various phases of laboratory work. The written material consists of an address by Mr. Geo. W. Merck, President, and Sir Henry H. Dale, C.B.E., M.D., F.R.S., Director of the National Institute for Medical Research, London, and Secretary of the Royal Society of London.

This publication will prove of great interest to the medical profession in general and may be obtained upon application to Merck and Company.

The introductory address of Mr. Merck contains general matters of interest, while the address of Sir Henry H. Dale, is entitled "Academic and Industrial Research in the Field of Therapeutics."

PABLUM—MEAD'S PRE-COOKED CEREAL

Mead Johnson & Co., are now marketing Mead's Cereal in dried pre-cooked form, ready to serve, under the name of Pablum. This product combines all of the outstanding mineral and vitamin advantages of Mead's Cereal with great ease of preparation.

All the mother has to do to prepare Pablum is to measure the prescribed amount directly into the baby's cereal bowl and add previously boiled milk, water or milk-and-water, stirring with a fork. It may be served hot or cold and for older children and adults cream and sugar may be added as desired.

Mothers will cooperate with physicians better in the feeding of their babies because Pablum is so easy to prepare. It gives them the extra hour's rest in the morning and saves bending their backs over a hot kitchen stove in summer. Please send for samples to Mead Johnson & Company, Evansville, Indiana.

ABSTRACTS « REVIEWS « COMMENTS AND CORRESPONDENCE

DERMATOLOGY, X-RAY AND RADIUM THERAPY

Edited by C. P. Bondurant, M.D.
413 Medical Arts Building, Oklahoma City

Medical Shock Following the Use of Neoarsphenamine. Orr (The British Journal of Dermatology and Syphilis, Febuary, 1933).

This article deals with medical shock following the intravenous injection of .45 grams of neoarsphenamine. The idea is brought out that the condition produces a relaxation of the capillaries in contrast to the relaxation of the arteries and arterioles as occurs in surgical shock. For this reason the author considers that the use of adrenalin in medical shock is of little value. To offset this, large amounts of normal saline solution are used to increase the blood volume, giving a liter of the solution and repeating in five or six hours if necessary.

Subsequent to Orr's experience in treating medical shock following neoarsphenamine injection, the Alberta government clinics have adopted the following routine: "When a patient with nitroid crisis fails to respond within three minutes to adrenalin, medical shock is assumed and intravenous saline started at once."

Following this procedure, the author believes that medical shock should be largely eliminated as a cause of death following the intravenous use of neoarsphenamine.

Treatment of Epithelioma of the Lip by the Dermatologist. Joseph A. Elliott, M.D., Archives of Dermatology and Syphilology, Volume 27, No. 3, March, 1933.

The essayist states that his purpose in writing the paper is based upon three factors: first, to call attention to a rather common yet serious condition; second, to emphasize the fact that the dermatologist sees most of the early lesions of the lip, directly or indirectly, and is best qualified to diagnose them; third, to make a comparative analysis of the results in different methods of treatment.

The idea in regard to the etiology is stressed in that various forms of local irritation, both physical and chemical, play an important role.

Elliott calls attention to two clinical types: the papillary and the ulcerative infiltrating variety, pointing out that the latter type is dangerous much earlier and metastasizes sooner.

The author analyzes 66 cases of primary epithelioma of the lip without glandular involvement. All of his cases were treated by first obtaining a biopsy with a cutaneous punch under local anesthesia, using digital pressure to offset hemorrhage; coagulating immediately followed to prevent bleeding and then the entire lesion was thoroughly coagulated. Subsequently unfiltered roentgen rays were given to the lesion and the glands of the neck treated by high voltage X-ray. Results were as follows: "Of all cases (66), 42 were treated over five years ago, 17 over three years ago and 8 from one to two years ago. There have been no local recurrences. None has shown metastasis to the glands of the neck. One questionable case in regard to origin has occurred in regard to a brain tumor.

Sodium Dehydrocholate in Arsphenamine Poisoning, Bernard Appel, M.D., Archives of Dermatology and Syphilology, Volume 27, No. 3, March, 1933.

The author calls to attention of the reader that Osborne and others have shown that arsphenamine has a very direct action on the liver and that degenerative changes begin in twenty-four hours after a lethal dose. Arsenicals cause two types of reaction which are related to liver metabolism; (1) jaundice; (2) nausea and vomiting.

The intravenous use of sodium dehydrocholate causes an increased bile secretion; hence, the author has treated six cases with this drug in those who have clinical manifestations of liver retention of arsenic as shown by jaundice or nausea or vomiting. In this preliminary report, the results were very favorable in overcoming these undesirable symptoms. In fact, the drug was used as a solvent for neoarsphenamine in those cases in which immediate nausea and vomiting were experienced and again very promising results were obtained. This allowed the continuation of the administration of neoarsphenamine in some cases that otherwise could not tolerate it.

In all cases of jaundice, the use of sodium dehydrocholate intravenously results in pdompt recession of the icteric index.

The author did not mention any value of the preparation in combatting arsenical dermatitis.

"Toilet-Seat Dermatitis" Produced by a Red Stain. Clyde L. Cummer, M.D., Cleveland, Archives of Dermatology and Syphilology, Volume 27, No. 6, June, 1933.

This article reviews two cases of the author's that experienced a rather marked vesicular dermatitis occurring on the buttocks. In one instance, the toilet seat had been recently refinished by applying a red stain, followed by a coat of shellac, then varnish. Replacement of the seat with a white one eliminated the dermatitis. The patch test to the skin revealed an inflammatory reaction on the site corresponding to the stain.

In the second instance, the eruption occurred following the purchase of a new red toilet seat. The eruption cleared after a new white seat was installed.

The author carefully investigated the various possibilities of the irritating agent and conclud-

ed that it was a sudan dye, although he was unable to prove this because his patient could not be found to make this specific test.

EYE, EAR, NOSE and THROAT

Edited by Marvin D. Henley, M.D.
911 Medical Arts Bldg., Tulsa

Treatment of After-Cataract. Lt. Col. Henry Smith, C.I.E., I.M.S. (Retired), Sidcup, Kent, England. Archives of Opthalmology, Vol. IX, No. IV, April, 1933.

The author reports a case of a cataract which had been extracted by one of the most competent operators in the world by the capsulotomy method. A dense after cataract had formed, the iris being tied down to it all around. Wisely he had not attempted to needle it, for in such an after-cataract, needling means death to the eye. He told the patient that nothing more could be done. The author having atropinized the patient heavily, made an incision as if for an iridectomy, caught a piece of the iris and excised it. An iris repositor was then inserted through the opening into the posterior chamber and the after-cataract was separated from its attachment all the way around. The pupil, when released, dilated, and iris forceps were inserted and the after-cataract removed. There was no escape of vitreous. A week later the patient was sent home with normal vision with spherical lens. Extraction of after-cataract is almost universal now in India; there is not a case of needling recorded except in one hospital.

Comments: It is admitted by all operators that the ideal extraction of a cataract is in the capsule. The general surgeon does not remove a portion of an adventitious growth and intentionally leave a part of its capsule or covering, hoping that it will be absorbed. He attempts to remove the offending growth in toto. This is basically good surgery. The principle still holds in the extraction of the crystalline lens. If this procedure is not followed there is always the possibility of an iritis, of a varying degree of severeness, and an after-cataract with which to contend.

Otitic Infection with Gastroenteritis in Infants. By Max Rabbiner, Brooklyn. The Laryngoscope, Vol. XLIII, No. IV, April, 1933.

Rabbiner reports his recent observations in nine cases of mastoiditis in infants complicating gastro-intestinal upsets. In the nine cases reported the intestinal upsets varied in intensity from a simple failure to gain weight to uncontrollable diarrhoea, dehydration, and continued vomiting. The fact that a paracentesis, single or double, produced nothing but a serous fluid in two patients, did not deter the author from proceeding to a single or double mastoidectomy, if the patient failed to show improvement. The soundness of this procedure was demonstrated by the finding of pus and granulation tissue in the mastoid cells. Of the nine cases reported, eight were operated upon, resulting in four recoveries and four deaths. The ninth case was not operated upon being considered a poor surgical risk and finally came to the autopsy table. The age varied from one to eleven months. The sex of the patient had nothing to do with the incidence of the disease.

Several of the leading authorities in the pediatric world are of the opinion that mastoid disease is an important etiologic factor in parenteral diarrhoea in infants.

The author's conclusions from the reported cases are: That in those infants having otitic infection with parenteral diarrhoea which cannot be checked by the pediatrists, mastoid surgery should be resorted to. The operation in all cases should be bilateral despite the fact that only one ear may show a definite otoscopic picture, while in the other the findings may be indefinite. Since the infection may be confined to the antrum and probably due to a localized pocketing of embryonal tissue around the aditus, the drum membrane does not show its true condition.

Rabbiner closes his report with a plea for closer co-operation between the pediatrist and the otologist.

Epistaxis In Pregnancy Requiring Ligation of The External Carotid—Review and Case Report. Abraham Strauss. Annals of Otology, Rhinology, and Laryngology, Vol. XLII, No. 1, March, 1933.

Strauss here reports a quite unusual case. In fact in his search of the literature, his was the only reported case to be found where ligation of the external carotid was resorted to in epistaxis in pregnancy. In the literature there are six cases reported of epistaxis during pregnancy, three of which terminated fatally. Interruption of pregnancy in one of these cases produced a cessation of the hemorrhage; pressure, cautery, and plugging anteriorly and posteriorily of the nares, stopped the other two.

DeLee, Williams, and Hirst in their publications mention nose-bleed as a common occurrence in pregnancy. Hirst states that the nose-bleed can be stopped by termination of pregnancy.

The facts as compiled by the author bear out the point that the occurrence of a severe nose-bleed in pregnancy takes place under the same conditions as a mild epistaxis, i. e., in women who have suffered from the affliction before becoming pregnant and also in the latter half of gestation.

Extensive laboratory work had been done on the case reported by Strauss. The other six cases reported in literature had no laboratory work with one exception. Etiology remains idiopathic although active hemorrhage usually comes from a ruptured septal artery.

Strauss tried packings and transfusion to no avail. In addition he used large quantities of glucose in an effort to combat shock and maintain the body fluids. The hemorrhage continued for about five days or until the external carotid was ligated.

The author was not able to find a reported failure to stop hemorrhage by ligation of the external carotid. In his opinion this procedure will always be efficacious because the direct blood supply to the nose is through the internal maxillary and sphenopalatine arteries. It is supplied indirectly through the ophthalmic branch of the internal carotid.

Otosclerosis. Charles B. Davenport, M.D., Bess Lloyd Milles, Ph. D., Lillian B. Frink, M.A., Cold Springs Harbor, N. Y. Archives of Otolaryngology, Vol. XVII, No. IV, April, 1933.

Davenport et al., after extensive work on this subject summarize their conclusions as follows:

By a rough estimate, about 0.2 per cent of the white population of the United States is otosclerotic. In certain fraternities 100 per cent are otosclerotic. The hereditary factor is thus obvious.

The petrous portion of the temporal bone, which contains the otic capsule, has a particularly complicated embryologic history, so that any disturbances or imbalances of the osteogenic function would be especially apt to affect the otic capsule.

The beginnings of deafness were first noticed in otosclerotic persons at from 4 to 55 years. Persons in the older group, are commonly, but not always with justification, suspected of progressive labyrinthine disease.

The original data of this paper were obtained, in part, by house to house visits of trained eugenic field workers, who gave auditory tests, ad in part by correspondence.

Sixty new families were studied and the distribution of otosclerosis in them was analyzed to get at the law of inheritance.

Approximately twice as many females as males are affected with otosclerosis, but other types of hardness of hearing affects the sexes equally.

In body build otosclerotic persons do not differ significantly from their non-otosclerotic siblings of the same sex, except that in pelvic breadth, in relation to shoulder breadth, and in chest girth, the otosclerotic females seem to be more slender than their sisters.

When both parents are otosclerotic, nearly all their daughters are otosclerotic or have a hardness of hearing of some type (one exception in a case from literature) . About two-thirds of the sons are otosclerotic.

When the mother only is affected, the proportion of affected sons and daughters is about the same.

When the father only is affected, the daughters are affected about 50 per cent more frequently than the sons.

When neither parent is affected and some of the children are affected, the two sexes are equally affected.

Ten hypotheses are tried out on the basis of these data, and the one that meets with no serious difficulty is: Otosclerosis develops under external conditions that favor it whenever the patient has a constitution that combines two dominant factors as follows: a factor X which lies in the sex chromosome and also a factor A, which lies in one of the autosomes.

The evidence that otosclerosis, labyrinthine hardness of hearing and deaf-mutism have the same genetic basis is hardly adequate; still, overlapping of these conditions may occur.

Comments: The detailed work involved in arriving at the above conclusions is comparable to the efforts of Shambaugh and associates in 1928, when they reported the results of the examination of over 3,000 deaf children.

Slightly momentary improvement or temporarily arresting the progess of the disease is the best the various methods of treatment have so far afforded.

It is agreed by the leading otologists that the cure of the disease appears to be impossible.

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SURGERY AND GYNECOLOGY

Abstracts, Reviews and Comments from LeRoy Long Clinic
714 Medical Arts Bldg., Oklahoma City

Bicipital Tenobursitis (Tenobursite Bicipitale) by E. Pasteur, Val-de-Grace Military Hospital (de l' Hopital Militaire du Val-de-Grace), Paris, La Presse Medicale, January 25, 1933.

Presenting bicipital tenobursitis as an important and heretofore unrecognized entity, it is defined as an inflammation of the long tendon of the biceps cubiti in the bicipital groove of the head of the humerus, together with the bursa which surrounds it in that location.

The principal assigned cause is an unusual and violent muscular effort through which the tendon is violently stretched, frequently associated with some general infectious disease. For example, one patient was standing in a trolley car, supporting himself by grasping a perpendicular bar above the level of the head. In resisting the sudden pressure by the crowd when the car stopped there was violent contraction of the biceps. A direct fall on the shoulder or upon the tense, extended hand may produce the same effect. There is in this case a reflex defense contraction to resist the loss of equilibrium by grasping any object within reach.

The initial symptom is pain which is accentuated by any movement that disturbs the tendon as it lies in the narrow bicipital groove. For example, it is painful to carry the hand to opposite shoulder, to elevate the arm when it is in rotation, and to carry the hand behind the back. There is tenderness when pressure is made over the tendon.

To pain is added weakness, and, later, stiffness so that any movement of the joint is impeded, but especially elevation of the arm.

In the average case not properly treated there is an apparent ankylosis in two or three months, but X-ray does not show osteophytes or any other evidence of bony ankylosis.

The author has found that the Faradic current is the most satisfactory treatment, improvement coming on quickly after several seances, with final definite cure. Untreated, the arm is practically useless.

Comment: In this connection, we have seen several cases of inflammation of the superficial acromial bursa. We can see how disease described by Pasteur might be confused with it. In superficial acromial bursitis the pain is intense, and the tenderness over a very circumscribed area just at the outer margin of the acromion is most exquisite.

—LeRoy Long.

The Use of Folliculin in Involutional States. By Elmer L. Sevringhaus, M.D., Madison, Wisconsin. American Journal of Obstetrics and Gynecology, March, 1933.

This article is the third of a series upon the subject of using folliculin in the involutional states experienced by women at or near the menopause. The two previous articles dealt with the results obtained, with particular reference to vasomotor disturbances and in menopausal syndromes quite similar to thyrotoxicosis. This paper deals primarily with the results of similar treatment in regard to the psychic and nervous phenomena, which are also commonly seen.

The additional therapy employed was simply psycho-therapeutic procedures. The principal therapeutic measure was small doses of folliculin daily, or oftener. These were found to be very helpful in the psychotic cases as well as in the simpler vasomotor types and the pseudo-thyrotoxic types.

It is pointed out that the cases of artificial menopause are more refractory to therapy, and the relationship of the pituitary and the ovaries at the climacteric is discussed.

One of the very important observations made is the fact that there are distinct disadvantages to large doses of the hormone. This author recommends an upper limit of 40 units per day in the treatment of menopause.

In view of his clinical experience, and since there is no known method of estimating the required dosage in advance, he has used some 10 to 25 units at one time, given once or twice daily. Theoretically, he feels that the more frequent small doses are better than the larger and less frequent ones. He lists the various unsatisfactory results of higher dosages and also points out that the manufacturers of this preparation have advised the use of daily doses as high as 200 units.

Comment: It has been my experience that in a fairly good percentage of the women suffering from psychotic, vasomotor and pseudo-thyrotoxic symptoms at or near the menopause material benefit results from the use of folliculin exactly as pointed out by this author.

The use of small, frequently repeated dosages has been very much more satisfactory in my hands than either higher dosages infrequently, or frequently repeated.

It is at once appreciated in discussing such therapy that many difficulties necessarily arise from our incomplete knowledge of the mechanism involved, the amount of deficiency, and the mode of application. Nevertheless, in these difficult situations, the additional aid furnished by this newer method of treatment is invaluable in a certain number of cases seen.

—Wendell Long.

The Treatment of Non-Union of Fracture by the Injection of Serum from Another Patient with Fracture (Le Traitement des Pseudarthroses par les Injections de Serum de Fracture). Report of M. Kuss at meeting Paris Surigcal Society, March 8, 1933. Abstract published in La Presse Medicale, March 18, 1933.

The report is based upon three observations by M. Raymond Imbert and M. Leon Imbert, of Marseilles. In the first case a man of 30 years had a non-union without any X-ray evidence at all of callus five and one-half months after fracture of the femur. On three different occasions 10 c.c. of serum secured from a donor who had a normally healing fracture (serum provenant de' un autre sujet fracture, en pleine phase de' osteogenese), was injected about the site of non-union. There was union in three months. In the two other cases the serum was injected beneath the skin. Satisfactory union resulted.

Referring to the initial studies of the question by Guyot of Bordeaux and Leon Imbert of Marseilles, and to the experimental researches of Petrault upon dogs, and of Luiji Baj upon guinea pigs, attention is called to the importance of the biological researches of Damboviceanu and Cospacesco upon the phenomenon of the calcification of the shell of the lobster during the molting season. The reporter concludes that the employment of serum from the "fractured" is efficacious in the treatment of pseudarthrosis.

—LeRoy Long.

Sarcoma of the Internal Semi-Lunar Cartilage of the Knee (Sarcome du menisque Interne du Genou by Gino Pieri, La Presse Medicale, March 4, 1933.

The subject is discussed in connection with the case of a robust man of 31 in good general condition.

There had been intermittent pain in the left knee for five years, the pain usually appearing on walking, and being more pronounced at the change of seasons and change of weather.

During the past few years the pain was sharper and more continuous. For several months there had been localization on inner side of joint, and there was a small tumefaction at that point. The joint was a little stiff.

For several weeks before examination the tumefaction increased more rapidly, the pain persisted through the night, the knee was not stable, and active motion diminished.

Examination showed slight deformity of the left knee by a firm, elastic, smooth, tender, rounded enlargement about the size of half a walnut just below the patella on inner side, the horizontal diameter being a little the larger. It was fixed to the subjacent bone. The skin over it was normal and movable.

The movements of the knee were distinctly limited.

Operation was done through a Mackenzy incision, the patella tendon being divided in its middle third. Exploration revealed a tumor the size of a hazelnut occupying the anterior part of the internal semi-lunar cartilage which was extirpated without difficulty.

Examination of the gross specimen indicated that the tumor took origin from the superior border of the anterior part of the cartilage. The pathologist reported that sections showed a fusiform protoplasm, irregular globulous cellular elements, with vesicular areas, as well as occasional polynuclear giant cells. The pathological diagnosis: "fuso-cellular sarcoma," (sarcome essentiellement fuso-cellulaire).

Four months after operation the knee was

stable, painless, and apparently perfectly normal.

—LeRoy Long.

Avertin Anesthesia—A Study of 431 Cases Compared with 431 Similar Cases Operated on Under Other Types of Anesthesia, at the Brooklyn Hospital, by William H. Field, M.D., and Lewis L. Pilcher 2nd, M.D. of Brooklyn, N. Y. Annals of Surgery, April, 1933.

These authors have studied in a conscientious and apparently fair manner 431 cases who were given avertin anesthesia and 431 controls. These cases were selected from the routine work of a general hospital rather than for particular use in this study. The comprehensive manner in which they have listed their conclusions makes it desirable to quote the advantages, disadvantages and observations which they make in regard to the use of avertin anesthetic as applied to the necessary needs arising in a general hospital or in general surgical practice.

Advantages—Pre-Operative. 1. Can be administered in bed without discomfort. Induction resembles natural sleep.

2. In cases of hyperthyroidism, emotional instability, etc., pre-operative excitement can be abolished by having patient's nurse give the avertin as if it were an ordinary enema.

Operative. 1. When supplemented with gas-oxygen, satisfactory anesthesia and muscular relaxation can often be obtained for many surgical operations which usually require deep ether anesthesia, including laparotomies and orthopedic manipulations.

2. When ether is needed in addition to the gas oxygen, the amount required is markedly reduced.

Post-operative. 1. Amnesia is usually produced covering the operative and early part of the post-operative period.

2. Immediate post-operative distress is in many cases considerably decreased due to (a) prolonged drowsiness; (b) decreased vomiting; (c) decreased respiratory irritation; (d) decreased ether-taste.

Disadvantages—Pre-operative. 1. Solution must be freshly prepared for each case and carefully tested for proper temperature and acidity.

2. When once administeed, dosage cannot be decreased because of rapidity of absorption.

3. Length and variability of induction period may delay the operating schedule.

Operative. 1. Depth of anesthesia with a given dose is uncertain and variable. For this reason cannot be satisfactorily used to avoid the use of ether (as when electro-cautery is used for head or chest operations, etc.).

2. It is unsatisfactory when used with local or regional anesthesia because patient is uncooperative while retaining power of motion or speech.

3. Anesthesia cannot be lightened if patient's tolerance decreases, as in the event of serious hemorrhage or operative shock.

Postoperative. 1. Prolonged post-operative special nursing is required because of long period of semi-coma and irrational restlessness.

2. Excretion is slow and is almost solely through the kidneys. Kidney output is frequently diminished markedly after operation, making excretion even slower.

3. The wide variation in susceptibility to avertin and narrow margin between the therapeutic and the toxic dose results in the occasional occurrence of toxic symptoms, and even death, after moderate doses (100 milligrams per kilo or less).

Conclusions. We feel, after studying these 431 cases of avertin administration and the 431 controls, that "Avertin Fluid" used as a basal anesthetic in combination with gas-oxygen or gas-oxygen and ether has some advantages not possessed by most other anesthetics and that accordingly it has a distinctly useful place in the role of anesthetics. There are on the other hand, several definite disadvantages which must be considered in selecting avertin for any given case.

The occurrence of toxic and overdosage symptoms in several cases with at least one fatality, after the administration of doses of 100 or 80 milligrams per kilo, indicates to us that this dosage is not entirely safe for routine use. We feel that the 80-milligram and 100 milligram doses have no important advantage over the 60 to 70 milligram dose and are considerably more dangerous. The 60 to 70 milligram dose, especially when combined with a pre-operative hypodermic of morphine, usually produces the essentials of a basal anesthesia. When this is adequate, there is no objection to giving a basal anesthesia. When this is adequate, there is no objection to giving a small additional dose of avertin after the effect of the initial dose has been fully observed.

The occasional production of complete anesthesia by the larger doses is, we believe, by no means an advantage, indicating rather an overdose with the associated greater risk. We feel, also, that any slight increase in the patient's comfort which may follow the use of larger doses is greatly outweighed by the increased liability to overdosage and to toxic reactions. We would prefer to use avertin only to obtain the minimal satisfactory basal anesthesia and to complete the anesthesia with gas-oxygen or, when necessary, ether. More ether seems safer than more avertin.

We consider certain conditions to be absolute contra-indications to the use of avertin—at least until more is known about the chemistry of detoxification and excretin of avertin in the body. In the presence of any of these contra-indications we would not consider even the 60 milligram dose safe to use.

Foremost among contra-indications we would place and condition lowering liver function. This would include not only intrinsic pathology of the liver and its ducts, but also circulatory insufficiency with consequent liver congestion and any condition associated with marked depletion of glycogen. Any evidence of decreased kidney function should be considered almost equal importance as a contra-indication. This means not only evidence of decreased function before operation as demonstrated by urine and blood tests, but also the probability of function being decreased more than usual following operation due to such causes as trauma to the urinary tract, post-operative shock, post-operative dehydration, etc. A review of the fatal cases discussed

above shows that in many of them there was evidence of impaired liver or kidney function and in some of them, primary disease of these organs.

As other contra-indications we would include:

1. Severe cardiac disease—because of the depressant effect of avertin on the circulation and because of the congestion of liver and kidneys associated with poor cardiac function.

2. Old age—because old people are often hypersusceptible to avertin on the circulation and because of senile and arteriosclerotic changes usually present in liver and kidneys.

3. Cachexia—because of the probability of lowered tolerance for all drugs, including avertin, and because of the usually poor glycogen metabolism.

4. Marked shock or dehydration—primarily because of effect on kidney function.

5. Marked acidosis or acute toxemia—because of disturbance of body chemistry and metabolism which may have a harmful effect on avertin detoxification. It is a question if severe thyrotoxicosis should not also be included in this group.

By adhering to the contra-indications and by using the 60 to 70 milligram dose rather than the larger doses, we feel that in the future we may prevent many undesirable reactions and avoid any avertin fatalities."

Comment: The choice of an anesthetic is an important consideration in any contemplated surgical procedure. With the numerous agencies which are now available and used extensively, the choice of an anesthetic depends largely upon the indications and contra-indications presented by each type available and application to each individual case and his particular condition.

Such studies as this one are valuable in acquainting the medical profession with the factors involved in the use of anesthetic agents in the "average run" of surgical situations.

—Wendell Long.

BOOK REVIEWS

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, Gynecology, Orthopedics, Pathology, Dermatology, Ophthalmology Otology, Rhinology, Laryngology, Hygiene, and other topics of interest. By leading members of the medical profession throughout the world. Edited by Louis Hamman, M.D., Visiting Physician, John Hopkins Hospital, Baltimore, Md., and others. Cloth, 314 pages.

This volume is unusually rich for those physicians interested in the degenerative diseases. For instance we have:

"Hyperinsulinism," by Russell M. Wilder.

"Pulmonary Hypertension," by William S. McCann.

"Stenosis of the Coronary Arteries," by Louis Faugeres Bishop, Jr.

"Dyspnea As A Symptom of Disease," by C. Sidney Burwell.

"Cyanosis," by Jonathan C. Meakins.

"Edema," by Chester S. Keefer.

"Causes of Hypertension," by John T. King, Jr.

"Clinical Manifestations of Arterial Hypertension," by R. H. Major.

"Prognosis of Hypertension," by James E. Paullin.

"The Treatment of Essential Hypertension," by Herman O. Mosenthal.

Of course the volume is rich in many other matters—Surgery, Therapeutics, Roentgenology, Clinical Pathology, Recent Progress In Obstetrics and Pediatrics.

Medical State Board Examinations. Topical Summaries and Answers. An Organized Review of Actual Questions Given in Medical Licensing Examinations Throughout the United States. By Harold Rypins, A.B., M.D., Secretary, New York State Board of Medical Examiners; Member, National Board of Medical Examiners; Associate in Medicine, Albany Medical College; Former President, Federation of State Boards of Medical Examiners of the United States; Former Instructor in Medicine, University of Minnesota. Cloth, 448 pages, price $4.50. J. B. Lippincott Company, Philadelphia.

This book is written for the special use of the student who has to face the ordeal of the State Board Examination. It is the result of ten years' experience with candidates for admission to the practice of medicine, and has been written in response to repeated requests from them for guidance in meeting the ordeal of the licensing examination.

Diet in Sinus Infections and Colds. By Egon V. Ullmann, M.D., Formerly Special Lecturer for Biology at the Orgeon State College; Instructor at the First Medical Clinic at the University of Vienna; Demonstrator at the Laryngological Clinic (Professor Hajek), at the University of Vienna; Assistant Physician at the Otolaryngological Clinic (Professor Neumann), at the University of Vienna; Member of the Research Staff of the State Serum Institute of Austria. Recipes and Menus by Eliza Mez. Cloth, 166 pages, price $2.00. The MacMillan Company.

The problem of diet is becoming constantly more important in the minds of physicians engaged in any and all lines of work. The author states that this is the first work constituting a systematic attempt to apply modern knowledge of nutrition to the individual who suffers from repeated colds and sinus diseases. This book, too, will also appeal especially to the specialist, but will be found useful in the hands of the general man.

Senile Cataract. Methods of Operating, by W. A. Fisher, M.D., F.A.C.S., Chicago. Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College; Formerly Professor of Clinical Ophthalmology, University of Illinois; Formerly Surgeon, Illinois Charitable Eye, and Ear Infirmary; Formerly President, Chicago Opthalmo-

logical Society; Member, Illinois State Medical Society; Chicago Medical Society; Fellow, American Medical Association; Fellow American College Surgeons; Fellow of the Academy of Opnthalmology and Oto-Laryngology. With the collaboration of Professor E. Fuchs, Vienna, Austria; Professor I. Barraquer, Barcelona, Spain; Dr. H. T. Holland, Shikarpur, Sind, India; Dr. John Westley Wright, Columbus, Ohio; Dr. A. Van Lint, Brussels, Belgium; Dr. O. B. Nugent, Chicago, Ill. 267 pages, 183 illustrations, 112 of which are colored. Published by Chicago Eye, Ear, Nose and Throat College, Chicago.

The originator of this volume was Professor E. Fuchs of Vienna, who has passed away since the first publication and editions following it. The work is carried on by the authority indicated. It will be noted that these authorities are scattered all over the world, one from India, where cataract seems to be a national disease. This volume of course will appeal directly to the specialist in eye condtions.

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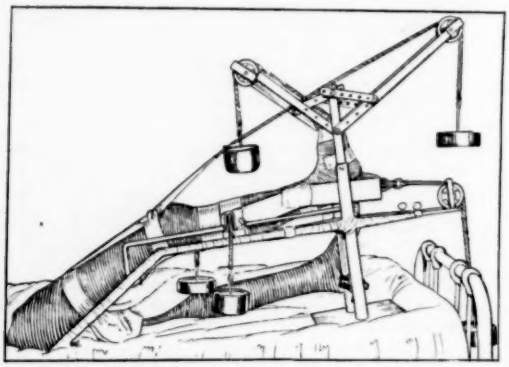

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